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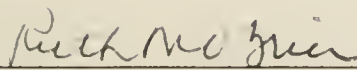
Function and Use of a Nineteenth-Century Barn
"Walnut Hill" Estate
Pawling Road, Lower Providence Township
Montgomery County, Pennsylvania

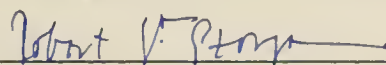
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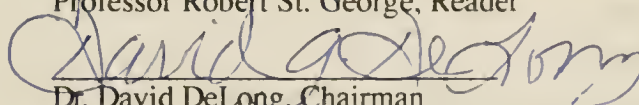
A THESIS
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The Graduate Program in Historic Preservation

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Professor Ruth O'Brien, Advisor


Professor Robert St. George, Reader


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When we understand the purpose of a barn, and of how it is laid out and used, we have gained insight into the operation of the farm itself, for the barn is the heart of the farm.¹

¹ Alfred L. Shoemaker, ed., The Pennsylvania Barn (Lancaster, PA: published by the Pennsylvania Dutch Folklore Center, Inc., Franklin and Marshall College, 1955), 80.

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Abstract

“Walnut Hill” Farm, located in Lower Providence Township, Montgomery County, Pennsylvania, functioned as a gentleman’s farm estate under the Wetherill family’s ownership from the 1820s to the 1890s. During this period the estate expanded, in terms of landholdings, new building construction and improvements to existing structures. Before the Wetherill’s era of expansion, which coincided with significant revolutions in farming techniques, the estate served as a prosperous working farm owned by the Henry Pawling family for three successive generations. In the 1820s the role changed from a working farm to a country seat for a wealthy Philadelphia merchant, Samuel Wetherill, Jr. Samuel Wetherill, Jr. initiated his land investments in Montgomery County in 1813, with the purchase of a parcel adjacent to Walnut Hill. After acquiring the Walnut Hill property, he commenced building the sandstone barn, measuring approximately 66 feet long by 41 feet wide. The barn, which employed a unique variant of the “English bank barn” design, provided sufficient storage space for the crops harvested on the estate in addition to housing the cattle and horses. Wetherill experimented with the latest in farm machinery, animal husbandry, crop rotation, and improvements in farm building design. The barn represents a major imprint of the his reign. When John Price Wetherill inherited his father’s estate in 1844, he set out to enlarge the barn utilizing the same layout and structural framing system as the earlier section. This resulted in the immense structure, which still exists today, executed in rubble sandstone, finished with decorative pointing, and measuring over 116 feet in length.

The barn at Walnut Hill was an integral part of the operation of a gentleman-farmer’s estate. Its “double-decker” design, built atop a ground floor banked into the earth, provided a three level structure, with a middle level devoted solely to the storage of grain. Such a large building attests to the farm’s productivity during its heyday from the 1820s to 1900s. During the mid-nineteenth century, a revolution in farming methods and machinery changed the way agriculture was conducted on larger farmsteads. As a result of the significant shift from self-sufficient to commercial farming, the design of farm buildings was greatly modernized to produce more efficient complexes. The barn that the Wetherill’s designed in the early and mid-nineteenth century indicates these changes and stands as an important testament to this period in Pennsylvania’s agricultural history.

Introduction

The image of Walnut Hill farm during the Wetherill family's ownership, which began in 1825 and continued up until the 1940s, was of a large farming complex of cultivated fields, grazing sheep and cattle, and the latest in farm buildings and machinery. Located in Lower Providence Township, Montgomery County, this 157-acre estate was bounded by the curving Schuylkill River to the south and west, and the Perkiomen Creek to its north.¹ Presently, the estate is comprised of a 57-acre tract under the management of the Valley Forge National Historical Park. Under Samuel Wetherill, Jr.'s direction, and later improvements made by his descendants, Walnut Hill flourished as a prosperous agricultural estate. The massive barn, constructed in 1826 and enlarged in 1845, acted as a focal point within this estate.

During its early development, the estate functioned as a large and productive farming complex, passing through three generations of Pawling family ownership before coming into the Wetherill's possession. It remained in the Wetherill's hands for over a hundred years, serving as country seat and experimental "gentleman farmer's" estate. The development of Walnut Hill as a farming complex coincided with the rise of the "scientific revolution", between 1810-1840, which encompassed experimenting with new crop rotation schemes and fertilizers, animal husbandry, and new, integrated farm buildings. According to Montgomery County historian, Gordon Alderfer, the region surrounding Philadelphia benefitted as a result and continued to flourish well after the Civil War period:

During those years economic activity in the whole wide Philadelphia region blossomed as never before. With the coming of the railroads, the factory system and mass production, with business greatly stimulated by the Civil War, fortunes were in the making...Fortunes made in the city frequently led their owners to create lavish homes in the country.²

Samuel Wetherill, Jr., a prominent Philadelphia paint manufacturer, began investing in Montgomery County land in 1813, due in part to the presence of white lead mines on the property which were used in the production of white lead paint.³ His fascination with the

area must have been sparked for he continued to invest in adjacent properties near the Schuylkill River, eventually accumulating an extensive landholding. By the time of his death in 1829, Samuel Wetherill, Jr. owned the entire peninsula in Lower Providence Township across from Valley Forge. He purchased Walnut Hill in 1826; the farm then consisted of 157 acres of prime farmland previously owned by Henry Pawling III. Samuel Wetherill Jr.'s son, John Price Wetherill, inherited the estate in 1844 when the property was divided up between the Wetherill children. He continued in the role of gentleman farmer from 1844 to 1853. It was John Price who was responsible for adding onto the barn in 1845, thus enlarging the structure to its present size, measuring 116 feet in length and 41 feet in width.

As gentleman farmers, the Wetherill's were at the forefront of agricultural innovation, experimenting with the latest fertilizers and crops, animal husbandry, and the development of new, more efficient farm buildings. The immense barn at Walnut Hill is significant not only for its scale, touted as the largest barn in Montgomery County, but also because it represents a unique type among Pennsylvania barn buildings. Most Pennsylvania barns were modelled on the Pennsylvania German two-story "bank barn", commonly referred to as the "Pennsylvania barn".⁴ The Wetherill's design, however, is inspired by the more atypical "English bank barn" predominantly found in the Lake District of England. The Walnut Hill barn is also larger than most barns, standing three-stories high and classified as a "double-decker". This unique plan consists of a bermed basement level used as stables, a middle level designated for the sole purpose of storing grain, and an upper platform level used for threshing and hay storage. More importantly, it stands as an intact physical reminder of the advanced farming techniques and technological developments, and the resulting improvements in farm architecture, that were being employed by wealthy landowners during the early to mid-nineteenth century. These gentleman farmers relied on vernacular farm models which they readapted according to the latest recommendations in farmers journals, as well as in order to satisfy their own ends.

The years from 1790 to 1840 were a period of agricultural awakening in Pennsylvania. Worn out fields were rejuvenated, farm mortgages paid. This was due not only to gypsum, lime, red clover, and manure but also to better prices resulting from wars in Europe and the development of city markets. "The New Husbandry" and new markets brought about to Pennsylvania farmers a period of prosperity that has not been surpassed.⁵

New buildings which integrated diverse farm functions were designed to respond to the changes that were occurring during this period of agricultural industry. Livestock was now housed in the basement level, with large hay mows and threshing floors above, accessible from a ramped carriageway at the rear. The structures at Walnut Hill were either constructed or greatly modified during the Wetherill's years of ownership and exemplify this adjustment to modern commercial and experimental farming practices. The barn, built by Samuel Wetherill, Jr., and significantly enlarged by his son John Price Wetherill, is a reflection of the developments made to mid-nineteenth century barn designs as well as standing as a unique example of an English bank barn, an atypical barn form to be found in the Montgomery County landscape.

The purpose of this study is to document the historical context and physical evolution of the Walnut Hill barn, as well as to determine the role and significance of the structure within the agricultural complex during the height of its operation in the mid-nineteenth century. Since the building was conceived and utilized during the Wetherill's management as a scientific farming estate, information on the farming practices of the Montgomery County area and adjacent farmsteads during this period provided an overall context for the barn. Its function and design were analyzed in relationship to the farmers' journals and agricultural magazines which promoted innovations in animal and crop husbandry, agricultural machinery and farm building design. Other primary and secondary resources used for the interpretation of the site ranged from deeds and wills, newspaper articles, and Farm Account Books kept by the Wetherill family. Photographs and measured drawings graphically illustrate the existing physical condition and extant evidence of the structure, providing a comprehensive record of this unique mid-nineteenth century barn.

Chapter One

Establishment of Montgomery County as an Agricultural Community

Although the barn building at Walnut Hill is directly linked to the Wetherill family's ownership from 1826 to the 1940s, the previous landowners were responsible for the estate's early development as a prosperous agricultural complex. "If there was one prevailing desire among the pioneer settlers, it was land. Land was one measurement of security. All wealth in those days originated directly in connection with the products of the earth, whether from farm crops or minerals...Above all else, Montgomery County was a region of farms."¹ The historical and physical components of Montgomery County are addressed in order to gain a perspective of how, and why, the area developed as a significant farming community early on. This will also set the scene for the Wetherill family's later contributions.

From the eighteenth to nineteenth century, Walnut Hill and its neighboring properties witnessed a transition from these large farmsteads, typically managed by a wealthy landholder or leased to tenant farmers, to scientific "gentleman farmer's" estate, owned by successful merchants or businessmen. These gentleman farmers had the time and wealth to experiment with new technologies, contributing tremendously to the 'scientific revolution' that characterized the mid-nineteenth century. As a result, Montgomery County gained a reputation "far and wide" for these great agricultural estates.² Walnut Hill made this transition when it changed hands from three generations of Pawling ownership, when it thrived as a large-scale farm of about between 200-500 acres, to Samuel Wetherill Jr., a successful paint merchant, and his family's successive ownership. In order to understand the significance of the Walnut Hill barn, it is important to go back to the area's early development as a farming community. The region was distinctly influenced by European cultures which shaped the county's early development. Walnut Hill's barn is classified as an "English bank barn," a type that originated from the Lake

Counties of England. Montgomery County was composed of a largely English population, leavened by German, Welsh, and Scotch-Irish settlers. Typically, the barns in this vicinity represented a German-Swiss influence. However, these various European precedents were often combined to suit the farmer's needs, resulting in more of a Pennsylvanian design which eventually became identified as the "Pennsylvania German bank barn".

Montgomery County was originally part of Philadelphia County, located just north of the city of Philadelphia. It is bounded by Philadelphia to the southeast, Bucks County to the northeast, Lehigh and Berks Counties to the north and northwest, and Chester and Delaware Counties to the west and southwest. The Schuylkill River acts as a natural boundary to the southwest, dividing Montgomery and Chester Counties. Originally, Montgomery County was heavily timbered with oak, hickory, and chestnut before the first European settlers arrived.³ Its natural topography, largely composed of ranges of hills and fertile valleys, created an ideal setting for the early settlers as they developed a highly profitable agricultural community.

The first groups of settlers were mainly of English/Scotch-Irish, Welsh and German descent, who received their land grants from the Pennsylvania Land Company. Early on, they settled different regions depending on their ethnic background, which were readily distinguished by their languages and folk traditions.⁴ The English concentrated in the lower third of the county east of the Schuylkill, the Welsh settled in Lower Merion and Gwynedd Townships, and the Swedish population settled in the Upper Merion district (along with Welsh), while other parts of the county were established by a predominantly German population.⁵ Slowly the cultures intermingled and by the eighteenth century a more ethnically diverse community evolved throughout Montgomery County.

Before the end of the seventeenth century, English Quakers were occupying large tracts of land in parts of Montgomery County, including Lower Providence

Township. William Penn divided the land into “manors”, consisting of vast estates of land over which the owner, or grantee, ruled. Montgomery County was initially divided into townships and manors, with large portions of land quickly sold to settlers or land speculators at a profit.⁶ William Penn was the owner of one of these manors, the “Manor of Gilberts”, which was later subdivided into Upper and Lower Providence Township (site of Walnut Hill), and parts of Skippack and Worcester Townships. Penn’s manor was located in a highly strategic position, between two river courses, and characterized by its abundance of fertile soils and rolling valleys.⁷ A portion of Penn’s manor, comprising 5,000 acres of what is now Lower Providence Township, was sold to London land speculators and resulted in a large Anglican settlement.⁸ The Society of Friends (Quakers) represented another constituent of the early eighteenth century population, settling in the area of Lower and Upper Merion Township, as well as parts of Chester and Delaware Counties.⁹ The Welsh immigrants were also on the scene, established a pioneer settlement in Montgomery County as early as 1682.¹⁰ Germans came as far back as 1683, however, it was not until the mid-eighteenth century that a large German population developed in Montgomery County. In 1729, the area was formally organized into Providence Township and was later divided, in 1805, into Upper and Lower townships.¹¹ Townships consisted of a mixture of English, Welsh, Swedish, Scotch-Irish, German, and Dutch families. A large English population was established early on in Upper Providence Township.¹² These early settlers developed a dominant farming economy in Montgomery County, and, as a result, the region took its shape in the form of large tracts of farmland:

The pattern of our early landscape was capacious and orderly. Its texture, which were the people and their farms, had the mellowness and dignity of well-seasoned wood. Close at hand there were lanes with vaulting canopies of trees and among them were houses with personalities like human beings. At a distance it was like a patchwork quilt of farm plots sewn together with a rough black stitching of stone fences.¹³

During the eighteenth century, the dominant farming economy in southeastern Pennsylvania, as well as Montgomery County, consisted of a general mixed agricultural practice. Wheat was the most prominent crop grown.¹⁴ Rye was another important crop,

but amounted to only about 15-20% of the total wheat production.¹⁵ Most farms also grew spring grains, oats, barley, buckwheat and Indian corn.¹⁶ Fruit trees were commonly found on farms, with an average of approximately two acres designated for apple or peach orchards. Typically, 100-150 fruit trees were grown on a farm, with the apples either fed to the animals or used to make cider.¹⁷ Potatoes and turnips were grown “in great plenty on every farm” and fed to the animals.¹⁸ For forage and hay crops, farmers during the nineteenth century grew legumes and grasses, such as white and red clover, bluegrass, and timothy, varieties of which were largely introduced from Europe.

The majority of farmers were involved in raising livestock. Swine was common on farms, with herds ranging in size between five to thirty pigs.¹⁹ Sheep were found on fewer farms, with about five to eleven sheep per farm, while cattle and horses were more common. Pennsylvania farmers were not successful with dairy production during this early stage and most of the dairy products were probably used for home consumption. Only later, starting around 1840, did it expand into a profit-making enterprise, with herd sizes ranging from forty to upwards of two or three hundred cows.²⁰ The increased herd size, as well as the flourishing milk production, was in large part due to the improved crops and stabling the cattle in barn buildings. Advances were made by gentleman farmers in the sheep industry, in an effort to produce a higher quality wool product. They introduced improved breeds of sheep, although major improvements did not get underway until after the 1800s: “One of the most spectacular features of Pennsylvania agriculture near the turn of the nineteenth century was sheep husbandry.”²¹

In the first half of the 1800s, the county continued to function primarily as a farming region. Throughout the early development of Montgomery County and elsewhere in Pennsylvania, farming methods were quite primitive--land was not efficiently managed and most of the equipment was hand-made.²² As a result, the production per acre was low and, according to European critics, the rotation schemes were “ill-defined”.²³ This was partially due to the abundance of fertile land which created little incentive to develop

more intensive farming practices. The average and large-scale farms were able to profit from general mixed farming and were, therefore, unwilling to risk their security by adapting 'scientific farming' techniques that gentleman farmers were promoting. This proved too troublesome and costly.²⁴ As James T. Lemon points out in his book, The Best Poor Man's Country, the scientific farming methods advocated such tightly regulated rotation schemes that were only feasible if the farm was involved in an intensive activity such as dairying, as opposed to the production of wheat. By 1790, there was a slow move towards livestock production. The period from 1810 to 1840 represents a major transformation in livestock husbandry. During this time, the cattle industry grew substantially in Chester, Bucks, Montgomery, and Lancaster Counties.²⁵ Near the end of the eighteenth century, farmers were more willing to accommodate new rotations of crops, which included the generous application of gypsum and soil-improving crops such as clover.²⁶ By 1783, the use of gypsum for grass and plowlands became a "favorite practice" and was used especially for stimulating growth of clover in upland pasture lands.²⁷ Irrigation ditches and drainage channels were also developed at this time, representing "one of the few marks of intensive working of the land". However, only the more "fortunate farmers" had the means to build these extravagant systems.²⁸

By the end of the eighteenth century, a few signs of improvements were felt but it is not until the turn of the century that a significant "revolution" in farming occurred.²⁹ It was not until this later stage that farmers adjusted from self-sufficient farming and exploitation to more specialized, scientific farming techniques.

After 1840, Pennsylvania ceased to be the 'bread basket of America.' The era of specialized commercial farming had begun. The dairy cow, not the wheat shock, became the cornerstone of Pennsylvania agriculture.. His manual labor was to be lightened by power machinery. He was to be the beneficiary of remarkable developments in the application of science to farming.³⁰

Improvements were primarily concerned with crop rotation, liming (application of gypsum) of fields, manure application, and the cultivation of 'soil-improving' crops. Other improvements dealt with more efficient designs for barns, inspired by the idea of

consolidating functions (such as housing animals, crops, grain storage and machinery) into one conveniently arranged structure. Most of these changes were due, in large part, to their introduction and advancement by gentlemen farmers.

Chapter Two

Ownership of Walnut Hill Estate

Walnut Hill occupies the peninsula between the Schuylkill River and Perkiomen Creek, directly across from Valley Forge National Historical Park. This area of land lying within the boundaries of Lower Providence Township, developed as a profitable farming community of tenant farmers and wealthy landowners of mostly German and English descent.¹ Walnut Hill reached its peak during the mid-nineteenth century when it operated as a gentleman farmer's estate.

The region's agricultural wealth is due, in large part, to the abundance of natural resources which is especially evidenced by its rich soils. As a result of its underlying geology, the peninsula is composed mainly of Triassic red shale, the soils are highly fertile and productive for most agricultural crops. The property is surrounded on three sides by the Schuylkill River and Perkiomen Creek and its proximity contributes to the high quality of soils. Land along the Schuylkill is characterized by Rowland silt loam, a soil well-suited for meadows and grazing land. Although very fertile, the area is prone to flooding making the land more suitable for forage crops or pasture.² At a later date, a filtration plant was constructed on the Schuylkill, thus altering the soil quality along this plain. A watercolor rendering of the estate during its heyday, mid-eighteenth century, depicts the area in the foreground as meadows used for grazing.³ The remainder of the land is primarily composed of Birdsboro silt loam with smaller areas of Lawrenceville silt loam, Penn-Lansdale loams, and Rowland silt loam-- all soils which are highly suitable to grain cultivation, meadows, orchards, and woodlots (Appendix A).⁴ A brook that runs north-south through the property, edged by Rowland silt loams and Penn-Lansdale loams, had orchards planted along the western side at one point. A land use study report conducted by the Morris Arboretum in Philadelphia, PA entitled, "Land Use Study of Valley Forge National Historical Park," describes the general layout of the Walnut Hill estate:

"It seems apparent that agricultural fields occupied most of the well-drained upland areas of this farm, meadows for hay or pasture were on the broad areas of the Schuylkill floodplain and scattered woodlots were located along stream bottoms, on steep slopes and any other areas not advantageous for crops."⁵

Montgomery County not only had a wealth of good soils, but was also known for its mineral riches. Some of the earliest industrial enterprises included lime-burning, mining and manufacture of iron, copper and lead ore. Lead ore was mined in the eighteenth century, shortly after the Revolution, on “Mill Grove” Farm in Lower Providence Township.⁶ These industries were short-lived since “more plentiful, purer, and cheaper supplies” could be obtained elsewhere, although some businesses continued up to the 1890s.⁷

The Pawling family was one of the largest landholders in Providence Township during its early settlement in the 1700s. Another large landowner was the Morgan family, who occupied the central portion of the peninsula where they erected “Millgrove Mills”. This consisted of a substantial complex of water mills, grist mills, and a saw mill. Henry Pawling owned a 500-acre tract comprising the western peninsula, which included a portion of what became known as “Walnut Hill” during the Wetherill’s ownership.⁸ The Pawling family maintained ownership of this tract, along with numerous other landholdings, for three successive generations. The Pawling’s, originally from England, settled first in New York State and then moved southward to the Perkiomen region, between Trappe and Fatland Ford, of Pennsylvania. Henry Pawling is recorded as one of the original purchasers of William Penn’s vast landholdings which consisted of 1,000 acres along the Neshaminy.⁹

The Pawling’s property consisted of a 500-acre parcel that was part of a larger tract of land initially purchased by William Penn and sold to Tobias Collett in 1708. The property was bounded on the west by the Schuylkill River, on the north by the Perkiomen Creek, and on the east by the north-south property line. A portion was sold to Edward Farmer in 1716 for 150 pounds.¹⁰ Edward Farmer, one of the largest land speculators in the region, sold off 500 acres to Henry Pawling (I) on September 15, 1719 consisting of a parcel of land bounded by the Schuylkill River and the Perkiomen Creek on the south, west and north and by a similar large tract of land, “Fatlands”, to the east. Henry Pawling, Jr.(III) was named one of the five commissioners to Montgomery County when it was organized

in 1717.¹¹

Henry Pawling, Jr., Jonathan Roberts, Sr., George Smith, Robert Shannon, and Henry Conrad, were appointed by act of Assembly in 1784 to purchase ground near Stony creek, and thereon erect a court house and prison for the use of Montgomery County.¹²

Henry (I) Pawling died intestate in 1739, and the siblings of Henry II released their rights to the property, leaving the entire estate under his ownership.¹³ Henry (II) was a lawyer as well as a prosperous farmer. He established a ferry crossing near the mouth of the Perkiomen Creek, as well as increased the size of his holdings to over 680 contiguous acres. Providence Township Tax Records, between 1769 and 1783, show that Henry (II) owned stock ranging from three to four horses, five to twelve cattle, and fifteen to twenty sheep, which reflect substantial livestock holdings. He was also assessed as owning two to three slaves during his ownership.¹⁴ An inventory of his estate taken in October 1792, and recorded in his will (R.W. No. 4976), mentioned only a few items related to the farm. His possessions are listed as including a riding horse, saddle, bridle, a red cow, a light wagon, and twenty-five bushels of wheat.¹⁵

Henry (II) had slowly divided the property among his three sons in a series of transactions between 1785 and 1791.¹⁶ To his son John, he left 166 acres for “love and affection” and five shillings which consisted of the land adjacent to, and to the west of, Walnut Hill.¹⁷ His second son, Henry Pawling (III), received the parcel known as Walnut Hill which he described in his will as follows:

I give and devise unto my son Henry Pawling his Heirs and assigns forever all the remainder of my tract of land in Providence Township...it being that part on which my Mansion House stands and in which I now live, there being between Two and Three hundred Acres of land contained therein with the Buildings and improvements thereon...¹⁸

John Pawling, son of Henry (II) had been living at Meadow Grove before his father's death in 1792. Nathan Pawling inherited the property located to the east of Walnut Hill, consisting of a 189-1/2 acre parcel.¹⁹ By this point, two homesteads were established on the original 500-acre tract-- “Meadow Grove” and “Walnut Hill”.

The property that Henry (III) inherited consisted of between 200 and 300 acres; his son, William, took over 100 acres and constructed a farmstead on it. Henry (III)'s property was assessed by the Pennsylvania State Tax Returns in 1793 as totalling 200 acres and 208 acres in 1803. The acreage is larger than the 157-1/2 acre Walnut Hill tract and can be accounted by its incorporation of an adjacent parcel of land. Buildings existing on the property around this time, as it was assessed in 1798, included the following:

1 house--stone, two-stories, nineteen windows, 45' x 32'
 1 springhouse--stone, one-story, 15' x 15'
 (Valued at \$900)
 1 barn--stone, 40' x 33'
 2 dwelling houses--tenant houses
 199 acres of land
 (Valued at \$4,836)²⁰

After Nathan Pawling's death in 1798, Henry (III) acquired his land and advertised it for sale one year later. The newspaper advertisement described his 154-acre parcel as having 70 acres of fields, 60 acres of woodland and 20 acres of "watered and bottom meadow".²¹ This description, most likely, is similar to the land use of Henry (III)'s Walnut Hill property (Fig. 1).

Upon Henry (III)'s death in 1823, his will directed his executors to sell his property:

I do authorize and empower my executors hereinafter named and the survivor of them to sell for the best price that can be obtained either at public or private sale as they shall think proper my plantation and tract of land as well as that part now in the tenure of my son William as that whereon I reside supposed to contain two hundred and fifty xxxxx acres with all the improvements and buildings thereon-the sale to be made in a reasonable time after my decease...²²

His will of December 3, 1823 included an inventory of his farmstead, which listed wheat, corn, buckwheat, hay, oats, rye, cattle, sheep, and swine on 260 acres (Appendix B).²³ In 1826, the 157-1/2 acre tract of Walnut Hill was conveyed to Samuel Wetherill, Jr., after three generations of (Henry) Pawling ownership, and remained in his family's possession up until the 1940s. During the Wetherill's ownership, the estate was transformed into an experimental, state-of-the-art country farming complex.

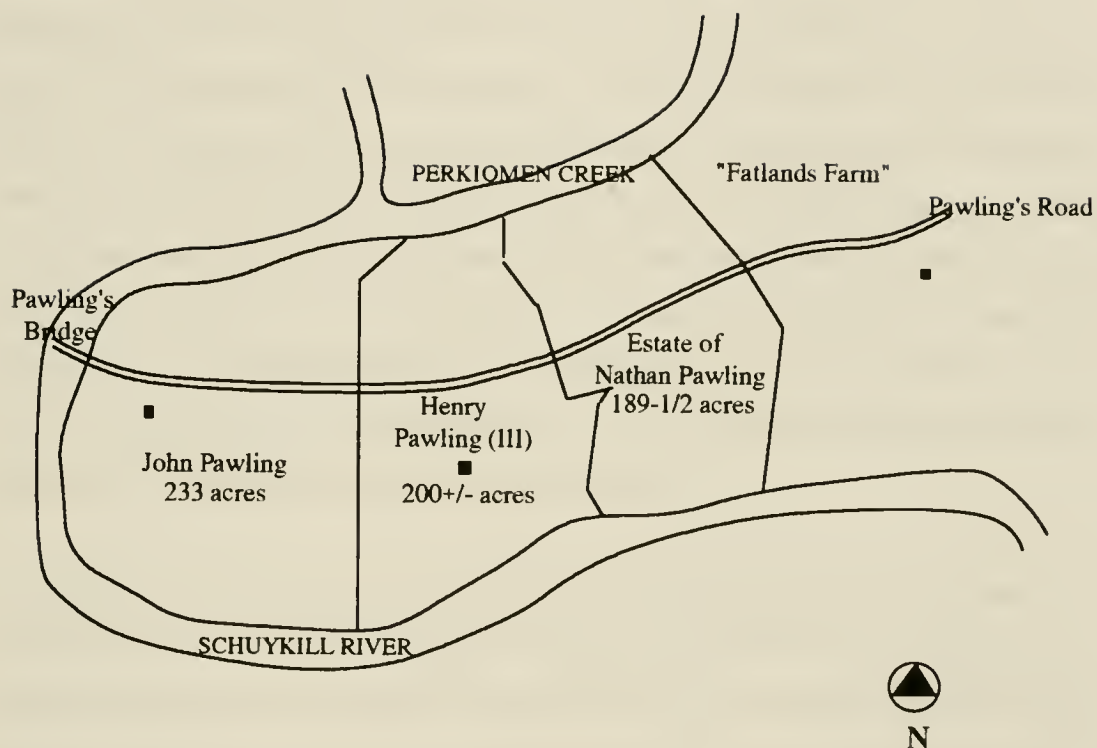


Figure 1: Pawling Property, circa 1798. Taken from Mark Frazier Lloyd, "Documentation of Historic Structures at 'Fatlands Farm' and 'Walnut Hill'," report prepared for Valley Forge National Historical Park, (unpublished), Valley Forge, PA, 1985, Appendix #1.

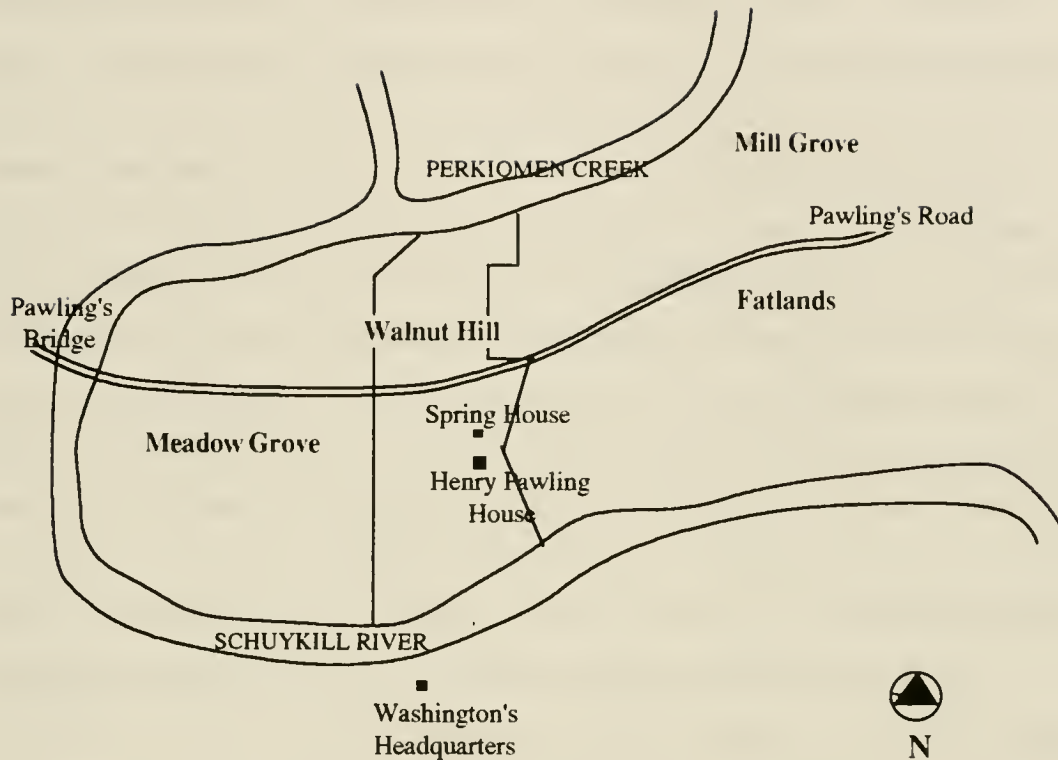
Samuel Wetherill, Jr. (1764-1829) began acquiring properties in the Lower Providence Township, Montgomery County in 1813. The Wetherill family was prominent for their innovations in the paint and chemical manufacturing business. “ Among the most prominent of the old Philadelphians who, over the course of several generations of their family histories, have contributed to the advancement of chemistry in America are the Wetherill’s.”²⁴ The Wetherill’s were of English stock and initially settled in Burlington, New Jersey before settling in Philadelphia. Samuel Wetherill, Jr.’s father, Samuel P. Wetherill (1736-1816), established the first shop in 1762 on Twelfth Street, under the name of “Samuel Wetherill & Son, druggists”.²⁵ Samuel P. gained the reputation of being the first in the United States to manufacture white lead. One of the leaders of American white lead production, the firm continued under the family’s management, under a number of different names, until 1932. The Wetherills also established textile and chemical plants, and were the founders of the white lead industry (manufacturing red and white lead) in the United States. They also managed a vinegar brewery, leaden pipe factory, oil of vitriol works, and held interest in coal lands in the Port Carbon region in Schuylkill County and lead mines near Philadelphia and in the state of Illinois.²⁶

Samuel Jr.’s initial investment in Lower Providence Township was, in large part, a business venture involving the purchase of a portion of the “Mill Grove” Farm.²⁷ His interest was sparked by the presence of lead mines along the Perkiomen Creek, which he relied on as a source of material for the manufacturing of lead paint. The War of 1812 interrupted the importation of pig lead from England, making a local source necessary. Supposedly the Mill Grove mines produced nearly 200 tons.²⁸ Miners were brought from England to work the mine, and a smelting plant was built in Philadelphia. Around 1825, Samuel Wetherill, Jr. was also involved in rebuilding a dam located on the Perkiomen, since he depended on water power for the mining and processing of the lead. He employed approximately fifty men to construct substantial stone abutments in the creek and heighten the walls which, in turn, increased the level of the creek and generated more power for the wheel.²⁹ The mines were abandoned in 1826 when Samuel, Jr. resumed

buying lead from abroad. He found that the quality of the local white lead source could not compete with the foreign product, and ended up being detrimental to his business.³⁰

However, his interest in the land remained and, in 1825, he purchased an additional 233 acres from the executors of John Pawling's estate for \$12,300. This parcel was described as including a "messuage, plantation and tract of land".³¹ This property was passed down from Henry Pawling (II) to his eldest son John and was located adjacent to, and to the west of, Walnut Hill. One year later, Samuel Jr. acquired the 157-1/2 acre Walnut Hill tract from Levi Pawling and James Milnor, the executors of Henry Pawling (III)'s estate.³² By this time, he had accumulated a sizeable holding of prime agricultural land in Lower Providence Township, overlooking the scenic Schuylkill River and Perkiomen Creek. Over the years, Samuel Wetherill Jr. and his descendants succeeded in acquiring the entire peninsula, which extended from Pawling Bridge to "Wetherill's Corner", and thus creating a country estate of significant proportions (Fig. 2). The Wetherill family retained ownership of these various landholdings for the next 125 years and the estate excelled as a gentleman farmer's estate, employing the latest technological innovations.

When Samuel Wetherill, Jr. died in 1829 he left behind his wife, Rachel, and six children--Rebecca Gumbes, John Price, Charles, William, and Samuel Price. He bequeathed to his wife their Philadelphia home and country residence, "my Farm called the Bakewell Farm in Montgomery County" (this refers to the adjacent farm, later known as "Fatlands"). The remainder of his property was ordered to be equally divided between his five children "...to hold...in equal parts as Tenants in Common...". Samuel Wetherill Jr.'s estate was held intact during Rachel's lifetime. Although the executors of his estate prepared detailed accounts of his finances, on file at the Philadelphia Register of Wills, they do not provide any information on his properties in Lower Providence Township. Samuel Wetherill, Jr. requested that no inventory of his personal property be taken, shedding very few clues to the holdings of the estate during his time.



Note: The Walnut Hill tract consisted of 157 acres 81 perches and was acquired by Samuel Wetherill, Jr. in 1826, a year after he purchased the adjacent 233-acre tract known as "Meadow Grove". The executors of Henry (III) Pawling's estate sold him the "message and plantation". There is no mention of a barn on this property at this time.

Figure 2: Walnut Hill Property, circa 1826. Taken from John B. Dodd, "Classified Structure Field Inventory Report: Meadow Grove Spring House," National Park Service, Mid-Atlantic Region, prepared for Valley Forge National Historical Park, n.p., n.d.

After his wife, Rachel Wetherill's, death in 1844, her estate was ordered divided. Her personal property was inventoried, including an extensive account of the contents of the Philadelphia house and a five-page inventory of the "Bakewell Farm", or "Fatlands" estate.³³ William inherited "Meadow Grove" while John Price Wetherill was awarded the 157-1/2 acre tract of "Walnut Hill". At a public sale held in October 1844, John Price Wetherill purchased 99 acres from the administrators of William Pawling's estate.³⁴ Acquisition of this parcel, which was located adjacent to Walnut Hill, reconsolidated Henry Pawling (III)'s farmstead consisting of approximately 257 acres.³⁵ An inventory of William Pawling's estate listed several items of interest regarding his farm and the crops grown on the farm, most of which John Price acquired when he bought the property. These included such items as a winnowing mill, grind stone, lumber, posts, chestnut and oak rails, wheat, corn, buckwheat, oats, potatoes "in the ground", seed clover, corn "in the ground", and buckwheat "in the ground".³⁶ This information provides insight into the types of crops that were grown on the neighboring farmstead and helps characterize general farming activities in the area. Along with the purchase of this property, John Price Wetherill acquired a number of belongings from William Pawling's farmstead. A copy of the "Vendue Book", Filed October 18, 1845 shows him as purchasing farm tools, animals, and other miscellaneous items:

<u>Item</u>	<u>Purchaser</u>	<u>\$</u>
1 Saw Chain	John P. Wetherill	20.00
1 bucket	"	37.00
1 bucket	"	35.00
Water bucket	"	80.00
Harrow	"	325.00
Red Cow	John Schunk*	16.00
Muley Cow	"	11.00
Grain in the ground		
@ \$12 p. Acre	J.P. Wetherill	117.22
Hay ladders	"	.05
17 b. Oats @		
26 cts. p. lb.	"	4.42
Lot of Oak wood	"	2.25 ³⁷

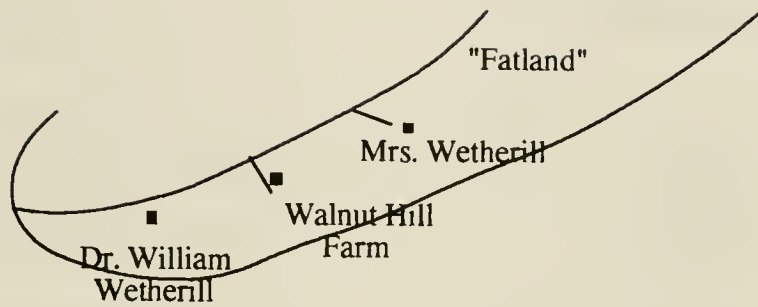
John Price Wetherill (1794-1853) was in partnership with his brother, Dr. William, who was the successor to his father's paint business.³⁸ John Price was also a resident member of the Philadelphia Society for Promoting Agriculture (April 18, 1838), a factor which may have influenced the way he managed his newly-acquired country estate.³⁹ John Price enjoyed Walnut Hill for only a short while since he died in July 1853. All his personal property at "my dwelling house in Dock Street and my country place at Perkiomen" was bequeathed to his wife, Maria Kane Wetherill.⁴⁰ An inventory of his personal estate was referenced in his will, located at the Philadelphia Register of Wills, but is no longer on file.⁴¹

Maria Kane continued to occupy Walnut Hill up until her death in 1877. At this point, the estate was formally divided between the children, with her will directing them to "share and share alike".⁴² On June 4, 1878, a Court of Common Pleas proceeding granted the 157-1/2 acre Walnut Hill farm to Maria L. Janeway, the daughter of John Price and Maria Kane (Fig. 3).⁴³ Maria L. (Wetherill) Janeway married a prominent Presbyterian clergyman, Reverend John Livingston Janeway, and they made "Walnut Hill" their home where they raised six children.⁴⁴ Maria's will dated September 18, 1890 placed her property in trust for her grandchildren, while allowing her two daughters, Maria K. and Rachel W., and her husband to continue living at Walnut Hill. The following is an excerpt from her "Last Will and Testament" (Register of Wills No. 3278, September 30, 1890):

I direct my said Trustees to allow my house and grounds adjacent, known as "Walnut Hill" exclusive of the farm to remain as the same now is and to allow my husband to have the free use and enjoyment of the same for his natural life in common with my said two daughters, Maria K. and Rachel W., who together in common with him their said father are to have the like free use and enjoyment of the said "Walnut Hill" for their natural life or until either of them shall marry...to be taken to include the use and enjoyment of the necessary grounds for gardens, the green houses, orchards, woodlands, waters and ways appertaining to the said Walnut Hill exclusive of the said farm adjoining, and all the silver, glassware, furniture, beddings, horses, carriages and harness appertaining to the said Walnut Hill Mansion...⁴⁵

Her will outlined several additional privileges set aside for her daughter, Maria K. Janeway:

1871



1893

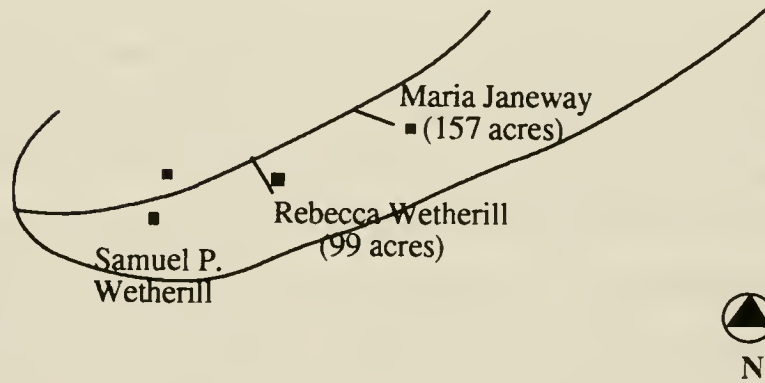


Figure 3: Division of Wetherill Property, circa 1871 and 1893

“take and receive such of the farm products as may be needful for the household purposes”, as well as “have without charge the use of stalls for her horses or for friends who may visit her, also hay and straw for the same manner”--both through an agreement made between Maria K. and the tenant farmer, Isaac Houck (April 3, 1883). An extensive scheduled account of estate expenses, covering the period from 1892 to 1902, is included in her will (Appendix B). An inventory of her estate, filed October 30, 1890, assesses her personal belongings and farm stock at Walnut Hill:

Household furniture, silverware, etc. in Mansion at Walnut Hill Lower Providence, Mont. Co.	500.00
Horses, Wagons, Harness, etc.	110.00
Farm Stock	511.00
Stocks, Bonds, & Mortgages	32609.02 ⁴⁶

Her husband continued to reside at Walnut Hill until his death in 1906, Rachel W. married and lived at the estate for a number of years, and Maria K. never married and presumably died there.⁴⁷

During the successive ownerships by the Pawling and Wetherill families, Walnut Hill developed as a substantial agricultural estate, reaching its peak by the mid-nineteenth century during John Price Wetherill's occupancy, when he was involved in major improvements to both the mansion and barn building.⁴⁸ The Wetherill children continued to enjoy, and even reside full-time, at this country residence. A 1935 Franklin Survey Atlas shows the 157-acre parcel as belonging to Augustine S. Janeway (son of John L. and Maria W. Janeway) et al., Trustees.⁴⁹ The will of Price W. Janeway, Jr., dated April 5, 1948, includes an appraisal of Walnut Hill which gives an idea of the decayed state of the property:

Undivided 1/8 interest in 77 acres of farm land upon which is located a dwelling, farmhouse and barn, all over 100 years old and in very bad state of repair. Known as Walnut Hill Farm and situated on Pawling Road...Farm rented to farmer on shares, producing no rent above taxes, total value \$16,000.00. Estate of Maria L. Janeway, dec'd. A.S. Janeway, Trustee, former owner⁵⁰

By this point, the estate had reached its peak. Although the farm was still rented out to tenant farmers, no profit was made and the buildings fell into disrepair.⁵¹

The “Wetherill Farm Account Books,” along with published advertisements of the adjacent properties which also functioned as large agricultural estates, provide comparative information regarding the function of the Walnut Hill Barn within the context of a large-scale agricultural estate. The methods used to care for crops and livestock were a significant aspect of the agricultural complex. By determining the farming capacity of Walnut Hill during its peak period from 1820 to the 1900s, it is possible to assess the barn’s role and determine how it functioned.

One large farmstead known as “Bakewell Farm”, and later named “Fatlands”, presented the greatest source of information. Its role as a gentleman’s farm is directly linked to a study of Walnut Hill’s changing land use. The property was advertised for sale on several occasions throughout its history, and as a result, the descriptions of the farm shed a great deal of insight into how the neighboring Walnut Hill may have operated. This property is not only adjacent to Walnut Hill, but it served as part of the Wetherill’s country estate for many years. An article in the Pennsylvania Gazette on February 28, 1771 gives a lengthy description of two properties for sale by James Morgan, one of the early owners of land along this peninsula in Lower Providence Township:

To be sold by public vendue, on the 4th day of March, upon the premises, if not sold before by private sale, by the subscriber [James Morgan, owner], in Providence Township, Philadelphia County, two valuable plantations, one of which contains 300 acres, bounding near a mile on the river Schuylkill, whereon is a good shad fishery; it also bounds on the lands of Henry Pawling, Esq. [“Walnut Hill”]; and extends along the same to Perkiomen; there are about 150 acres cleared, 20 whereof are good watered meadow, and a great quantity more may be made; the woodland well timbered, and the whole well watered, with the conveniency of watering every field on the whole plantation; there is a good stone dwelling house, spring-house, and brwe-house, with a large frame barn, three good bearing apple orchards, with a large peach orchard, bearing plentifully. The other contains 250 acres, bounding on the Perkiomen, 100 acres whereof are cleared, 35 acres of good watered meadow, and more may be made, a good stone dwelling-house, situated on a public road, in a suitable place for public business, as it is an old licensed house, also a large stone barn, stables, springhouse & c. also a good bearing orchard, the woodland well-timbered, the fields well-watered; quitrent 4d per 1000 acres. Titles indisputable, with many more conveniences, which will be made known by applying to Thomas

Morgan, on the premises, or the subscriber, living at Dyrham Furnace.⁵²

In 1813, one of the above described properties (the 230-acre tract known as “Bakewell Farm”) was advertised for sale by its owner, William Bakewell. It describes the farm as containing approximately 200 acres, with one-third set aside as woodland and the remaining land used as meadow or cultivated. The farming complex consisted of a large stone dwelling house, large stone barn, two tenements, springhouse, “thrashing mill” (capable of threshing 12 bushels of barley in an hour), cider mill and press, carriage house, stone hay barn (56’-0” long with a wagon house underneath), stone building for sheep, icehouse, poultry house, smoke house, and stone hog sties. The orchards contained both peach and apple trees, and the shad fishery was still located on the Schuylkill River. Bakewell sums up the property as follows: “...in healthiness and in fertility this farm is not exceeded by any other in the state of Pennsylvania.”

William Bakewell was a prominent gentleman farmer, and an active member of the Philadelphia Society for Promoting Agriculture (P.S.P.A.), whose activities in experimental farm machinery, crops and animal husbandry were published quite frequently in local farmers’ journals.⁵³ He managed a large-scale, successful sheep farm for almost ten years “upwards of 200 sheep of the English and Merino breeds”, and raised a variety of other animals including “a pair of Oxen, and other cattle; four Asses, 7 horses, ...above 30 pigs of the English Berkshire breed...”⁵⁴ Later, in 1844, the same property was advertised in the Norristown Register and Democrat. It was put up for sale by the executors of Samuel Wetherill, Jr’s estate, the owner from 1822 until his death in 1829, and described in the advertisement as:

That valuable farm part of the estate of Samuel Wetherill, dec’d., known by the name of the Bakewell Farm, and situate in Lower Providence township...about six miles from Norristown and two from Pawling’s bridge, and Reading railroad...Containing about 196 acres, about 80 acres of which is woodland of excellent quantity, fine soil, and well timbered...the farm is well supplied with fruit trees. It is well worthy the attention of a gentleman who desires a beautiful, healthy and convenient country residence...⁵⁵

Advertisements for the Walnut Hill property were non-existent since the estate remained in the family's hands for over a century. The Wetherill's did however keep detailed account books during the latter years of their involvement in large-scale gentleman farming. The Historical Society of Montgomery County has the original copies, covering the period from 1861 to 1883, and their contents will be discussed later in this section. The "Wetherill Farm Account Books" consist of six volumes covering the period from 1861 to 1883 and serve as an insightful primary documentation regarding the scale and type of activities. They include first-hand information on the crops harvested, livestock raised and other farm expenses relating to "Walnut Hill" as well as the adjacent farmstead, "Fatland" (Appendix C). Although little can be gained in regard to its earlier phase during Samuel Wetherill, Jr.'s time, the account books provide valuable information on the dominant farming practices on the estate during the later nineteenth century when the estate reached its peak.⁵⁶ A few of the prominent names appearing in the account books include Wetherill, Logan (tenant farmer), Janeway (Wetherill family descendants), Fatland (adjacent "Bakewell Farm"), and Houck (tenant farmer). Account Book No. 1 (1861-1864) mentions a wide variety of items being sold on the farm consisting mainly of wheat, oats, corn, apples, cider, potatoes, pork, milk, hay, lamb, wool. Chickens were raised on the farm at this time.⁵⁷ It includes a listing of the cows, referred to by name, sold in the year 1864.⁵⁸ Another Farm Account Book, covering the period from 1862-4, records such purchases as several bushels of cloverseed, sacks of salt, ten cider barrels, and over 500 pounds of Cowfeed.⁵⁹ Account Book No. 4 contains a list of the wheat crop harvested and taken to the mill for flour during the period from April 1878-February 1879, which totalled 73 bushels. It also notes that the "wheat crop harvested 1877 produced 487 1/2 bu. exclusive of what was sowed, 50 bu.- entire crop 837 1/2 bus."⁶⁰ The account books provide a fairly accurate accounting of the size of the cow herd residing on Walnut Hill farm during the years 1859 to 1878. The herd size grew, however, not all these cows were housed in a single barn complex. A breakdown of the herd size in 1866 mentions 27 cows at the "Old Barn", while the rest of the cows (20) were housed in the "Mall".⁶¹ The account book (1862-64) contains a list of the cows,

including their names and worth, which totals sixteen.⁶² An agreement was written between John Price and Thos. Logan (tenant farmer) on April 1, 1863 stating the division of the herd between them:

I have today sold my one half of the cows belonging to me to Thos. Logan for 350\$. I have 27 and he 4 so that of the entire herd say 31 cows he owns one half and I one half.

J. P. Wetherill
Thos. Logan⁶³

The majority of the cows were probably housed at this barn, and were located in the 1826 section which was adapted to function as a modern dairy operation. An entry made in 1865 refers to a herd size of 37, consisting of 26 milkers, 4 dry, 6 two year-olds.⁶⁴

The Walnut Hill barn served as one of the focal points within the agricultural complex during its operation as a scientific farming estate, which continued to function as a thriving enterprise into the early 1900s. The barn's efficient design successfully integrated spacious accommodations for cattle and horses, along with substantial storage space for hay and grain. In 1949, the trustees of Maria L. Janeway's estate sold 57 acres of the Walnut Hill parcel to Lyle and Mary Boulware for \$15,000.⁶⁵ This smaller parcel of land resulted from two changes—the purchase of the riverfront acreage (south portion of the farm) by the State of Pennsylvania Fish and Wildlife Department in 1944 and by the introduction of Pawling Road to the north (Fig. 4). The land still followed the same east-west boundary lines of the “Walnut Hill” parcel. The property continued to function as a working farm during the Boulware's ownership, although not matching the scale of the previous Wetherill era. The mansion caught on fire in October 1967, and stands as a ruin on the estate. In 1984, the Boulware's sold 42 acres of land to the National Park Service and the grounds of the estate are now owned and maintained by the Valley Forge National Historical Park.

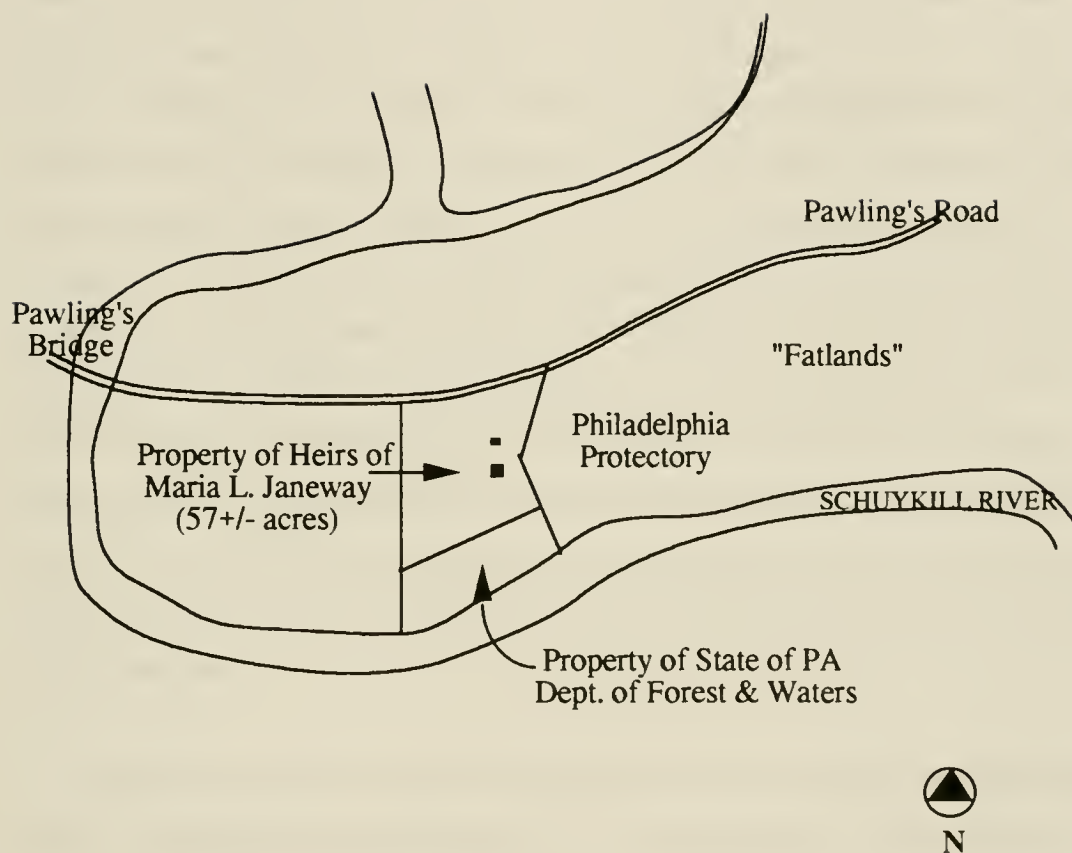


Figure 4: Division of Property, circa 1949. Taken from "Wetherill Properties" File, map drawn July 16, 1949, Historical Society of Montgomery County, Norristown, PA.

Chapter Three

Pennsylvania Bank Barns and their European Precedents

A common feature throughout the rural landscape of early nineteenth century southeastern Pennsylvania is the “Pennsylvania bank barn”, a barn type introduced by the German, Swiss and English settlers. Pennsylvania farmers adapted this basic barn type and developed it to a “high degree of perfection” which resulted in a complex set of barn buildings dotting the landscape, distinguished by subtle regional variations.¹ It is the survival and predominant appearance of the bank barn which distinguishes the agricultural regions of central and southeastern Pennsylvania. The core area focused around Lancaster, Berks, Lebanon, Chester and York Counties, which served “as a laboratory for the development of successful agricultural practices and the selection of appropriate farm structures”.² Although the bank barn evolved into a distinctly ‘Pennsylvanian’ building form, it cannot be completely understood solely in its North American context.³ The different bank barn precedents, which developed along parallel lines and were largely inspired by the idea of consolidating mixed uses into one structure, dictated the original design. Due to this fusion of European origins, the divergent types of Pennsylvania barns represent various degrees of modification and synthesis between the Germanic-Swiss and English traditions.⁴

As agricultural practices developed in Pennsylvania and changed from pioneer farming, devoted to grain production, to mixed grain and livestock production, the versatile bank barn type (whether it was of English, German, or Swiss derivation) was enlarged and modified throughout the nineteenth century.⁵ The European traditions, however, are still clearly evident in the barn buildings that were constructed from the early eighteenth into the nineteenth centuries. The different European origins are discussed in this chapter to illustrate the modifications and synthesis between the different European traditions. This European context is necessary in order to determine the European inspirations that were conveyed in the design of Walnut Hill’s barn, as well as to decipher other aspects of the

design that are uniquely 'Pennsylvanian' or influenced by the technological literature of the period. As discussed in the previous chapter, Montgomery County displayed a diversified cultural base with the different groups integrating their European origins with their new way of life. Montgomery County was considered a 'contact zone' of English and Germanic traditions.⁶ This historical perspective provides an important facet to understanding the design of the Walnut Hill Barn--whether it was inspired by English or Germanic roots (or a combination), if it fit into the category of a typical "Pennsylvania bank barn", or if it was influenced by the technological literature of the period.

The essential form of the "Pennsylvania bank barn", is a two-level rectangular, gabled farm building situated along either a natural slope or an artificial incline, allowing the upper level to be reached by the bank or ramp. Its advantageous siting allows access to both the upper level and lower stable area. The second floor consists of storage bays arranged on either side of a central threshing floor; the partially bermed lower level is divided into open stalls for housing the animals. The "forebay", or projection of the second level, is the defining feature which characterizes the Pennsylvania bank barn. This cantilevered bay typically projects about six feet over the front wall of the stone stable section, which serves to protect the animals during bad weather and create extra threshing space and grain storage above (Plate 1).⁷

Numerous descriptive accounts of Pennsylvania farming practices and their barn buildings were written by early travellers to the Pennsylvania area. Robert Sutcliff, in his "Travels in Some Parts of North America, In the Years 1804, 1805, & 1806", recorded one of the earliest descriptions of a Pennsylvania bank barn near Paoli, Chester County:

The barn is of stone and stands on descending ground, having a south aspect. It is about 40 yards in length by 10 in breadth, and 9 yards high in front. Along the north side of the barn is a range of vaults which communicate with it, and are on the same level with the barn...As the carriage-road into the barn runs over the vaults, as high as the top-most floor of the barn, the vaults are preserved cool in the summer, and free from frost in winter. The whole of the ground floor of the barn being set

apart for stables and cow-houses as is commonly the case with barns in Pennsylvania, there is accommodation for a great number of horses and cows. Along the front of the barn, about 8 feet from the ground, a wooden stage projects about six feet from the wall, enclosed overhead six or seven feet high, and also at the ends and side, forming a gallery the length of the building; having several communications or doorways out of the barn into it. In the floor of this gallery are several trap doors, through which they throw fodder for the cattle into the yard during the winter months. It is obvious that an appendage of this sort must be very useful in a farm-yard, as it also affords a comfortable shelter to the cattle from rain or snow.⁸

Another early observer, Charles Trego, studied this barn type during his travels in the 1840s. He noted that the buildings generally measured 60 feet to 120 feet in length and were “substantially built, either wholly of stone or the lower story of stone and the superstructure of wood, handsomely painted or whitewashed.” He went on to comment that the interior arrangement of stables, threshing floors, granaries, and hay storage “is admirably convenient and useful”.⁹ Maximilian, Prince of Wied, provided a more accurate description of the interior in his “Travels in the Interior of North America”, stating that the stables had “eight or twelve doors and windows...At the end of the building there is a passage where the wagons stand under cover.”¹⁰

When the original German settlers populated parts of southeastern Pennsylvania, they brought with them their traditional form of the “Sweitzer” bank barn, mainly imported from the Rhineland-Palatinate region. Originally these bank barns were constructed of squared logs or stone.¹¹ It has been documented that parts of central and eastern Switzerland commonly constructed the same type of barn structure, known as the “Swisser” barn.¹²

The farmers of mountainous Bavaria and Switzerland built barns that were dug into the side of a hill, so that they could be entered directly from grade at different levels- the ground floor being accessible from the front, and the upper level from the opposite side, higher up the slope. The lower floor, which was half-buried in the earth and easier to heat, was for the animals; the colder upper floor, for storing wheat or hay. In cases where the slope of a hill was not steep enough, earth would be banked against the rear wall to form an access ramp. The banked barn was first introduced to North America by German immigrants to Pennsylvania, where it is known as a Sweitzer barn...¹³

The “Swisser” bank barns were also distinguished by their “forebay”, or cantilevered upper level over the stables. Although not as well-known, a form of “English bank barn” predominated the rural landscape in the Lake Counties of England, which differed in appearance due to its lack of a forebay.

The perfected American bank barn, often called the Pennsylvania barn, had the same characteristics as those listed for its British counterpart, but it was usually much bigger, and, in addition, it usually had a ‘forebay’,... (like the English canopy or pentise)... Not all Pennsylvania bank barns have a forebay ...but certainly the forebay is generally characteristic of the Pennsylvania barn¹⁴

The Germanic-Swiss connection is well-established as the direct precedent for the evolution of the “Pennsylvania bank barn” since it is defined by one essential characteristic, the forebay. Little credit is given to any link with the English tradition since its design does not incorporate this distinguishing feature.¹⁵

In Switzerland, the bank barn developed in two forms--the flat barn built directly on the ground with the entrance on the side, such as the “Swiss flat house”, and the dominant Swiss “Highland German house” or “bridge barn”, which had its ground level partially bermed with a ramp leading to an upper loft level. The second form was directly influenced by the hilly landscape in which it was located and consisted of an elevated drive, which allowed wagons to enter directly into the upper loft barn. Characteristic features of the Swiss house or “bridge barn”, include the following: 1) basement area walled against the hill and was used as stables for horses, sheep, cattle, and swine, 2) threshing floor located above the basement with the threshing area placed in the center and hay mows on one or two sides (this loft section would have originally been occupied by the family. Another story was often added above, resulting in a “double-decker” barn), 3) “forebay”, or extension of the upper level, 4) bank, or inclined driveway, which led up to the threshing floor (survival of the inclined driveway into the loft space of the Swiss house), and 5) “notched” roof which functioned as a large door opening, reached from the bank and allowing direct access for the loaded hay wagon into the threshing floor.¹⁶ It is this

type that is a direct precedent of the “Pennsylvania bank barn” which typically stands two stories and houses the animals (i.e., horses, cattle, sheep, swine) at the ground level and stores their feed, wagons and farm implements above.¹⁷

One advantage of building the barn into a hillside was that it allowed wagons direct access into the threshing floor area, making it more convenient to unload wheat or hay into the hay mows. The ramped rear entrance also permitted access at two different levels from the ground. If a hillside was lacking, the barn would be constructed either on level ground or employing an earthen ramp or “bank” built up to the second floor. The bank was generally found along the rear, or long side of the building. Often a space was left open between the barn’s elevation and the ramp, which is referred to as a “barn bridge”, to provide a protected carriageway for wagon storage. The south side, which remained level with the stall area, provided a sunny, sheltered area for the animals.

The interior arrangement of the Swiss bank barn varied greatly, but can be generalized in order to understand how the building functioned. The stables, located on the ground floor, typically had half-openings located along the front wall to allow the animals access to the barnyard (Plate 2). The upper level was designated primarily for the processing and storage of hay and grains, making it possible for farm work to be done under a roof. The threshing floor was usually divided into three bays, with the center bay serving as the threshing floor and equipment storage. The two side bays were designated as hay mows, which often reached to the underside of the roof and provided sufficient storage for hay and straw. Hay chutes were conveniently located near these mows for easy delivery to the stables below. Large double doors were aligned with the central threshing floor bay and were located at the rear or banked elevation. Doors were located along the front (south) end of the threshing floor to provide a draft for hand threshing and “winnowing”, as well as depositing hay to the barnyard below.¹⁸

The English version of the bank barn was most characteristically found in the Lake

Counties due to its hilly terrain, with the main concentration in Cumbria, Pennine Cumbria, and the West Cumberland Plain (Plates 3-5).¹⁹ The principal farm buildings found in this region were the barn, cow-house, stable and granary, while the “bank barn” was a more specialized farm structure, mainly a development of the eighteenth and nineteenth centuries.²⁰ The English bank barn developed along parallel lines to the German-Swiss counterparts, and basically served the same purpose of consolidating mixed uses under one structure. Essentially, its design combined the traditional threshing barn with the cow-house and stable barns and was praised for “its compactness, its economy, and, very often, its rugged beauty.”²¹ The English bank barn was almost always situated along the contours of a natural or artificial slope.²² Its arrangement was similar to the German and Swiss types-- a ramp provided access to the upper threshing level and the lower level opened into the farmyard. The efficiency of its design saved on labor-intensive activities, in that the “unprocessed crops were hauled easily into the upper level and straw, or later hay, could be dropped through hatches into the cow-house and stable”.²³ The arrangement of the upper level was composed of a central threshing floor and large barn doors opening outwards at the head of the ramped rear entry. The doors were usually protected by a canopy and sometimes incorporated projecting wings, or “outsheds”, to each side of the ramp. A “winnowing” door was located at the opposite end of this opening, placed high up on the wall.²⁴ Upper windows generally consisted of ventilation slit openings. The lower level combined several different functions together. Access to a cart shed, generally located directly below the threshing floor, was flanked by a cow-house and stable. In place of the typically Swiss “forebay”, the English bank barn employed a small cantilevered canopy, or pent roof, over the stable doors (Fig. 5).²⁵

The evolution of bank barns in Pennsylvania represents a fusion of different European traditions, resulting in complex variations of an essential form which are largely distinguished by their geographical region--Western, Central, Northern, and Southeastern. The “Pennsylvania Bank Barn” has been linked to the “Sweitzer” or “Swisser” barns originating in Germany and Switzerland. The bank barns that predominate in Chester and

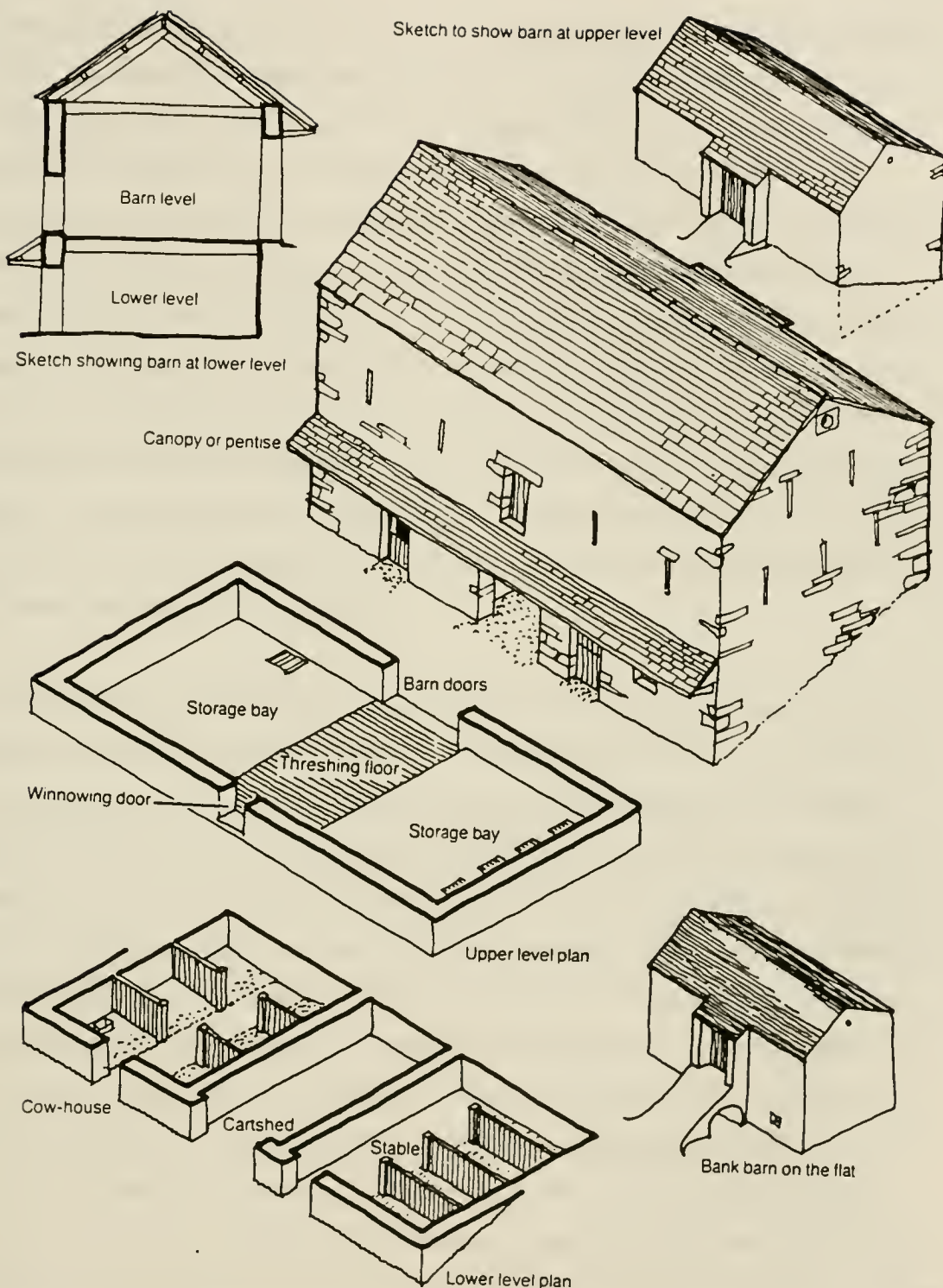


Figure 5: Isometric drawing of English bank barn showing floor plans, cross section and elevations. Illustration from R.W. Brunskill, Traditional Farm Buildings of Britain, London: Victor Gollancz Ltd., 1987, 114.

Lancaster Counties, on the other hand, reflect a strong connection with the English “Lake District” barn form. The systematic classification of Pennsylvania barn buildings was initially undertaken in 1941 when Charles H. Dornbusch, A.I.A., photographed and classified the divergent types according to the different counties. Sponsored by the American Institute of Architects in Washington, Dornbusch’s final product was published in 1956 by the Pennsylvania German Barn Project, and entitled “Pennsylvania German Barns”. Charles Dornbusch’s findings resulted in the identification of eleven barn types. Appendix D contains his “Summary of Pennsylvania Barn Types” which includes plans, elevations, and sections of the different barns (Appendix D). More recently, Robert Ensminger has been conducting extensive research on Pennsylvania barns and is currently writing a book on Pennsylvania German Barns. Part of Ensminger’s work has focused on revising this earlier classification into a system composed of three general categories, which are further divided into sub-categories.²⁶

One variant type of the bank barn classified by both Dornbusch and Ensminger is the “double-decker” barn, a building form of Swiss and English derivation. This type, most commonly found in Chester and Lancaster Counties, has been attributed to the Quaker farmers’ constant enlargement of their barns as a result of the need for increased storage capacity. These farmers altered the “Lake District” bank barn in two ways--by adding on a forebay to serve as a straw shed, thus increasing the storage capacity, and/or extending the structure vertically into a “double-decker” structure, and forming a distinctly new three-level bank barn.²⁷ The double-decker consisted of a two-level loft above the stable. The upper level, accessed by the ramp or “bank bridge”, contained the threshing floor. As Robert Ensminger points out, there were a number of advantages to this design: “extra capacity or hay storage in a deeper loft area; easier gravity filling by unloading hay downward from threshing bridge; large, protected granary below the threshing bridge...”²⁸ The lower level was reached by either stairs or a ladder from the threshing floor, or through door openings below the exterior bridge. The Walnut Hill Barn is an example of a double-decker barn and will be discussed in the following chapter.

In addition to these European precedents, other factors contributed to the improvement of Pennsylvania barn designs, such as agricultural journals and farmer's manuals. As early as the 1790s, the merits of "bank barns" were discussed in the literature of the period, but farm publications did not become widespread until the 1820s, coinciding with the introduction of new farm planning systems as well as the height of the Pennsylvania agricultural revolution (1795-1820).²⁹ Some provide insightful descriptive and illustrative accounts of the latest in agricultural practices, technological advances, and farm architecture of the two relevant time periods—namely the 1820s and the 1840s.

Only a few farmer's manuals were published early on to promote agricultural farm building improvements. One of them, written by John Beale Bordley (1727-1804), a prominent member of the Philadelphia Society of Promoting Agriculture, discussed common agricultural practices and, specifically, barn design in Pennsylvania.³⁰ An excerpt from his book, Essays and Notes on Husbandry and Rural Affairs, written in 1799 (Philadelphia) provides a detailed description of the "Swisser" barn in 1799:

Farmers in Pennsylvania have a commendable spirit for building good barns, which are mostly of stone. On the ground floor are stalls in which their horses and oxen are fed with hay and cut straw and rye meal, but not always their other beasts...the second floor with the roof contains their sheaves of grain, which are thrashed on this floor. A part of their hay is also here stored...A bridge may be built up to this second floor for supplying the want of height in the bank, the wall of one end being built close to the bank of a hill cut down. For giving room to turn waggons within the barn it is built thirty-six to forty feet wide.³¹

S. W. Johnson's Rural Economy, published in 1803, mentions the unique design of Pennsylvania barns: "...they require the advantage of a hill to set one side of them in, so that a loaded wagon can be driven up the hill and unloaded two or three stories above the lower floor..."³² John Nicholson (of Herkimer County, N.Y.) published The Farmer's Assistant in 1814 which included sections relating to the size and general orientation of the barn:

The size of the barn ought to be proportionate to the produce of the farm, for in this country, where building is not expensive, all the hay and grain ought to be stored in buildings sufficient to cover them...

If the ground will admit, the barn ought to be about so far distant from the house, and in such direction from it, as to preclude all danger of fire being communicated from the one to the other, by the means of the most prevalent high winds.³³

On the subject of barnyards, Nicholson recommended a high fence surrounding it to secure the cattle and break the wind, with the cattle kept confined in the yard during foddering season. A well should be located nearby to supply a convenient supply of water. Nicholson also recommended that the yard be level with the lowest area in the middle to prevent manure from escaping, especially during heavy rains.³⁴

Traditional building practices drew extensive criticism in the agricultural journals, particularly on the practice of clustering buildings: "One of the first major building reforms advocated by early nineteenth-century agricultural writers was the adoption of a single large barn to replace smaller, clustered barns."³⁵ Writers praised the widely publicized Pennsylvania German barn as "a model for a centralized, efficient barn." design³⁶ The attack on clustering farm buildings was usually coupled with an appeal to build barn cellars for root crops and manure storage, considered an essential component in the new centralized barn plan.³⁷ A number of agricultural journals provide discussions, as well as technical plans regarding the improvement of barn design and function. Articles discussing the Pennsylvania barn have been found in the following sources, spanning the period from the 1820s to the 1950s: American Agriculturalist, The Country Gentleman, Farm Quarterly, The Farmer's Cabinet, New England Farmer, Ohio Farmer, Ohio Cultivator, and Pennsylvania Cultivator. The Ohio Cultivator published an article in 1847 which expresses the advantages of building on a hillside: "Many farmers prefer a side hill on which to place a barn, so as to have stables and sheds in the basement, and entrance to the main floor above from the upper side of the hill."³⁸ An article in The American Agriculturist (1847) includes descriptive and illustrative text on James P. Hutchinson's barn in Montgomery County. The building, constructed of rough cast stone, had overall

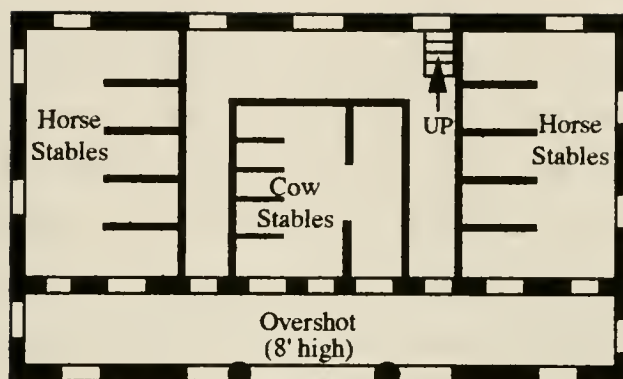
dimensions of 60 feet in length by 40 feet width, with an elevation of 30 feet to the eaves. The barnyard was supplied with water by a hydraulic ram which drew water from a reservoir 900 yards away.³⁹ It describes the barn yard as "...of sufficient space for cattle to take air in winter, and for other purposes, is flanked by sheds, &c., and substantially enclosed by a stone wall".⁴⁰ The rear elevation had a wagon drive entering up to the third floor level, and was reached by the gradual incline of an artificial bank (Fig. 6). The writer spells out its advantages:

...the hay and grain when unladen from the wagon, are cast down, rather than pitched upwards, an advantage of the greatest moment, at a season when time and help are of double value. The hay and fodder reach the feeding floor by means of funnels or conductors, which carry it to convenient points.⁴¹

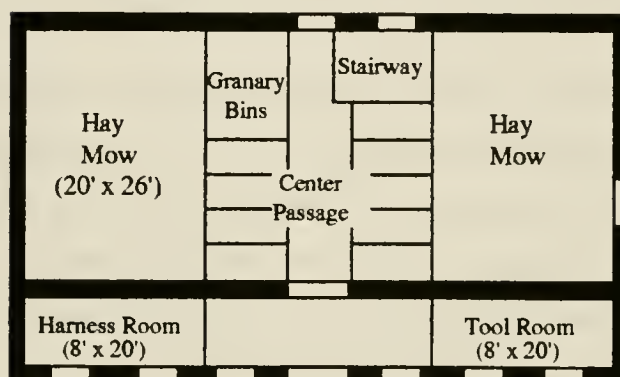
An 1837 article written in the The Farmer's Cabinet entitled "Remarks Upon Agricultural Buildings. No. 3. Barn and Stabling", discusses the improvements to certain aspects of a barn's design based on the writer's suggestions. The writer highlights the efficient arrangement of the ground plan, or basement story, which should be large enough to contain all the horses or animals on the farm:

This is supposed to be one hundred and twenty feet long and to contain sixty head; it is also supposed to be forty feet wide, with an entry through the middle the whole length, and a range of stables on each side of the entry, the whole length so constructed that the animals stand in them with their heads towards the entry. The entry receives hay from the bays above through vertical flues which extend from the entry to the floor or floors above. There is a door at each end of the entry, and a glass window above to admit light when the doors are closed.⁴²

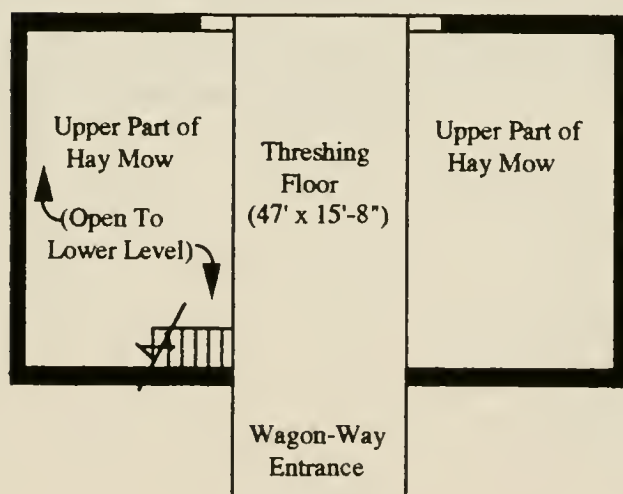
He goes on to recommend that the windows in the stables should be screened or secured by bars. The doors at this level should be located at opposite ends of the entry, with one door allowing two animals to pass through it. The floors to the stables, entry, and ground around the building should be paved with stone "and the interstices filled with lime and sand mortar, and made as smooth as possible".⁴³ The slope of the stable floor and ground around the building, the writer remarks, should descend from all sides at a rate of 1"=10', with the purpose that "...all the fluid substances which are dropped upon the stable floors shall run to the lower ends, and from thence in suitable channels into a cistern made water



Ground Floor



Second Floor
8' Headroom



Third Floor

Figure 6: Floor plan arrangement, Estate of James P. Hutchinson, Esq. Montgomery County, PA. Illustration from A.B. Allen, ed., "A Pennsylvania Barn," *The American Agriculturist*, Volume VI, New York: Harper & Bros., 1847, 24-25.

tight at the bottom and side.”⁴⁴ The cistern would then be pumped up into a “hogshead”, placed on a sled, and taken out to the fields to be distributed. The upper story should be designed to project beyond the side walls of the basement, in order to shelter the stable doors, and it should be high enough to “convey provender (except grain)” for the animals, during the “time they are removed from pasture in autumn, till they are returned to it again in the spring.”⁴⁵ A window should be placed at the opposite end of the barn from where the loaded wagons enter to provide sufficient natural light. A window should also be placed in each gable end to admit air and light into the structure (Figs. 7 & 8).

This agricultural literature was widely distributed, especially to gentleman farmers who had the time and financial resources to invest in these time-saving technological improvements. Another significant proponent of the agricultural movement in Pennsylvania was the Philadelphia Society for Promoting Agriculture (P.S.P.A.), who published articles on the latest advancements in farming and, in some instances, building technology. Most of these articles were contributed by its members, who were among the wealthy gentleman farming community. William Bakewell, of “Fatlands” Farm was often cited as an important advocate of the scientific agricultural reforms. Frequent meetings were also held at the various country estates outside Philadelphia to observe, first hand, the agricultural practices of a particular farming operation.

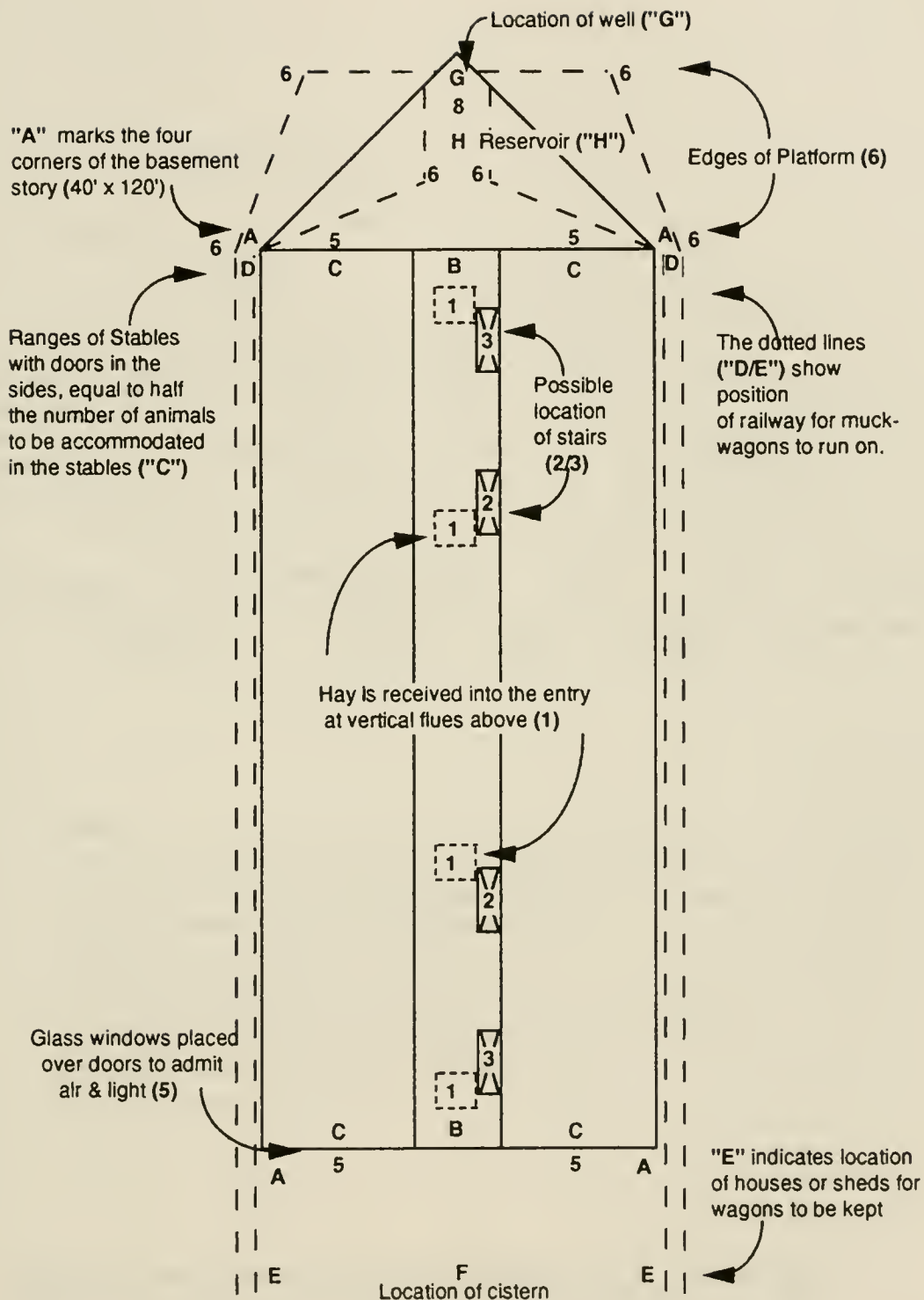
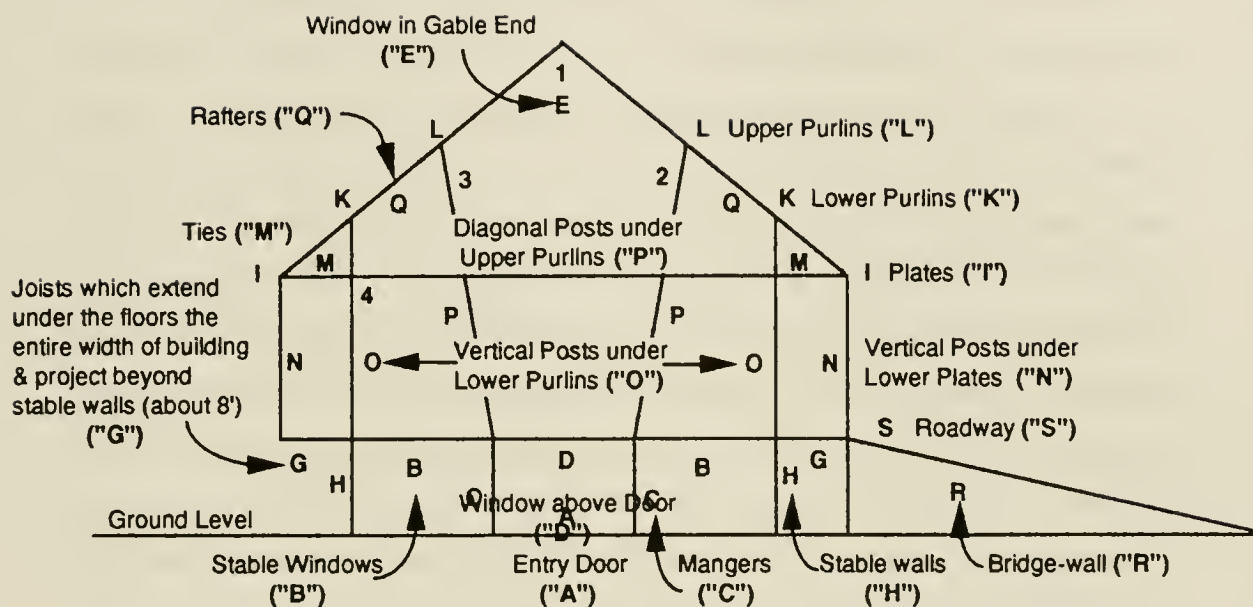


Figure 7: Basement floor plan showing efficient layout of stable area. From "Remarks upon Agricultural Buildings. No. 3. Barn and Stabling," *The Farmer's Cabinet*, Volume II, August 1837-July 1838, Philadelphia, PA: John Libby Publishing, 1838, 181.



Notes:

This elevation shows the frame and machinery for unloading a wagon.

"1" shows the position of a block suspended to the summit of two rafters; two vertical pulleys turn upon one fixed shaft or rafter.

"2" shows the position of another block suspended to a purlin or rafter; one vertical pulley located here.

"3" shows the position of a block suspended from a purlin or rafter; three vertical pulleys are located here and turn within it upon one fixed shaft.

"4" shows the position of the center of a wheel and axle.

"5" friction pulley

Figure 8: Cross Section of bank barn, Chester County, PA (1837). From "Remarks upon Agricultural Buildings. No. 3. Barn and Stabling," 197.

Chapter Four

Walnut Hill Barn

The Walnut Hill barn is a distinctive building, as much for its immense scale as for the technological revolution that it represents. The previous chapter presented an overview of the European precedents that were synthesized and modified during the evolutionary development of the Pennsylvania bank barn. The Walnut Hill barn falls within an atypical category among Pennsylvania typologies for several reasons—it lacks the essential Pennsylvania forebay, stands as a three-story “double-decker” barn incorporating a middle level for grain storage, and its exterior walls are constructed entirely of sandstone. The “double-decker” barn type, which has been accredited to Swiss and English derivation, is most prevalent in the adjacent Chester County and not common to Montgomery County.¹ The barn’s stone construction, compact design and lack of a forebay presents a strong link to the English bank barn. Technical journals written during this period were influential in shaping its efficient layout, in conjunction with these European precedents. The Wetherill’s role as gentlemen farmers suggests that they were well-informed about the advances in farming technology, which was largely promoted by farmers’ journals as well as the Philadelphia Society for Promoting Agriculture (P.S.P.A.). The neighboring properties, namely that of William Bakewell, were involved in large-scale scientific farming and would have contributed ideas for the improved operation of Walnut Hill. The initial construction of the barn in 1826 and its later expansion in 1845 coincided with Pennsylvania’s “agricultural revolution”. Therefore, it is crucial to examine all these different facets in order to place the barn in context of the Wetherill farming estate.

As previously mentioned, documentary evidence is limited on the role of the large stone barn within the context of Walnut Hill as an agricultural estate. What is understood about members of the Wetherill family is that they were among the wealthy Philadelphia merchant class, knowledgeable about the latest in experimental agricultural practices and building techniques, who engaged in gentleman farming at their country estate. Few wills contained inventories and executor’s accounts that discussed the farm’s business and belongings.

Maria L. Janeway's will (Register of Wills No. 3278, Septemer 30, 1890) mentions two insurance policies for the farm. They are entered in the "Income Account" records for the year 1897 and lists the following entries:

Farm--Mutual Fire Insurance Co., Montgomery
County Assessment
Farm--Union Mutual Fire and Storm Insurance Co.²

Unfortunately this reference does not include the policy number, nor does it make a specific reference to the barn building. Very few farm buildings were covered by fire insurance companies before 1800 and it was not until around 1840, with the development of mutual companies, that fire insurance was purchased to insure barns and other outbuildings.³ On-site observation of the extant evidence provided the most important clues in interpreting the barn's evolution. This physical evidence, combined with the earlier discussion of the Wetherill's "Farm Account Books", helped to place the barn within the context of the farming estate.

The barn is situated just southwest of the main house, with fields surrounding it on the north, south and west sides (Figs. 9 & 10; Plate 6). As a result of its close proximity to the main house, special attention was paid to the execution of the east gable end facing the house, which was executed in a symmetrical, restrained manner.⁴ The Schuylkill River, located about one-half mile south of the barn, flows along a northwest course, connecting with the Perkiomen Creek to the north. Fields along the Schuylkill were primarily used as meadows for grazing sheep and cattle (Plates 7 & 8).⁵ At an early stage in the region's history, a canal system was established along this river course, when the Schuylkill Canal began operating in 1824. A series of dams and locks was designed to allow an efficient means of river transportation from Philadelphia to the Port Carbon region in Schuylkill County, and passenger boats were powered by horses along the bank.⁶ An advertisement for the sale of "Bakewell Farm" property after Samuel Wetherill's death, highlights its river location: "The value of this property is much enhanced by its proximity to the Schuylkill Navigation, affording an easy mode of conveying to market its wood, & c., and obtaining supplies of lime and manure."⁷

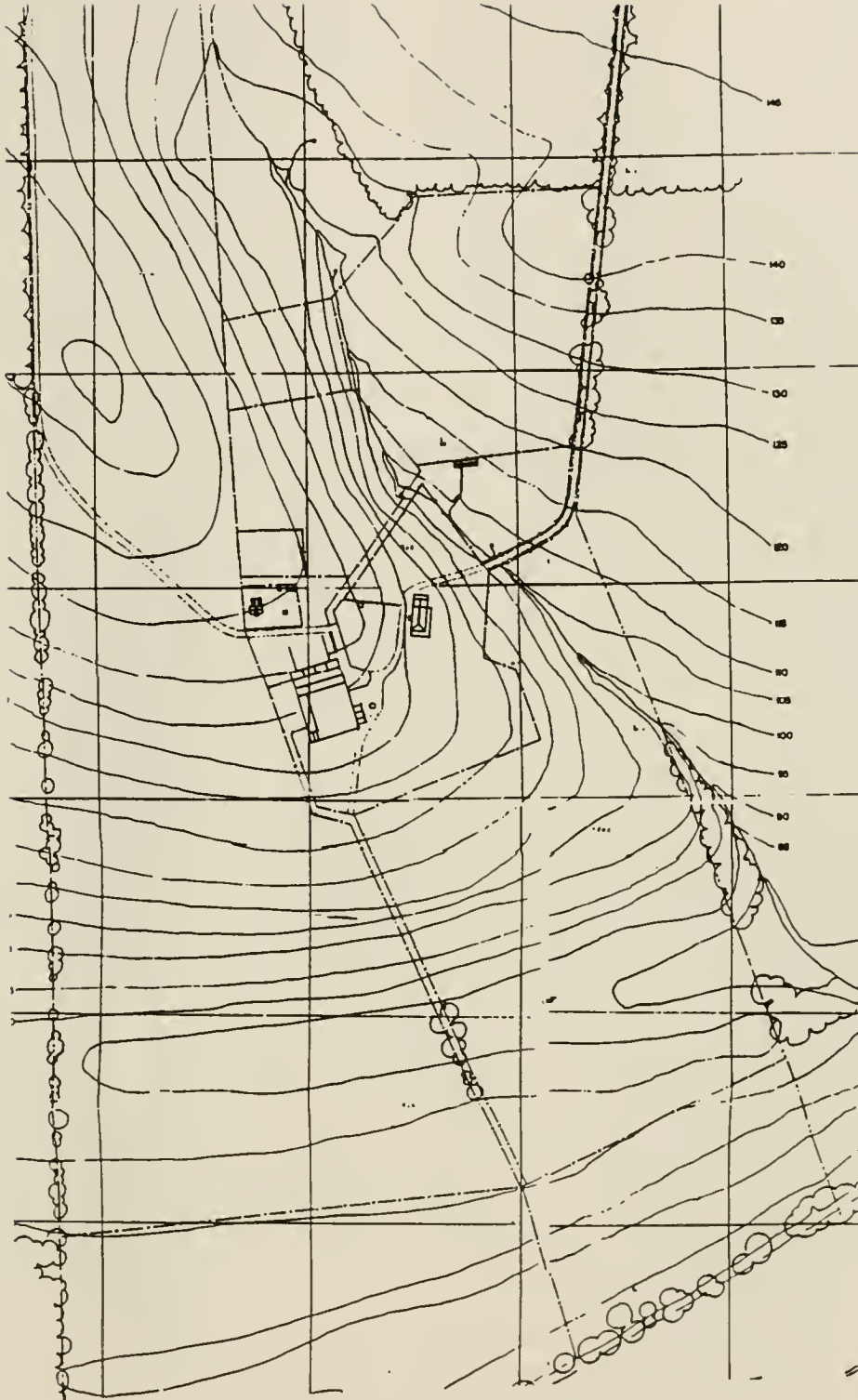


Figure 9: Site plan prepared by Tim Long, 1990, based on surveys conducted by J.L. Janeway, Reg. Engineer, in 1929. Valley Forge National Historical Park, Valley Forge, PA.

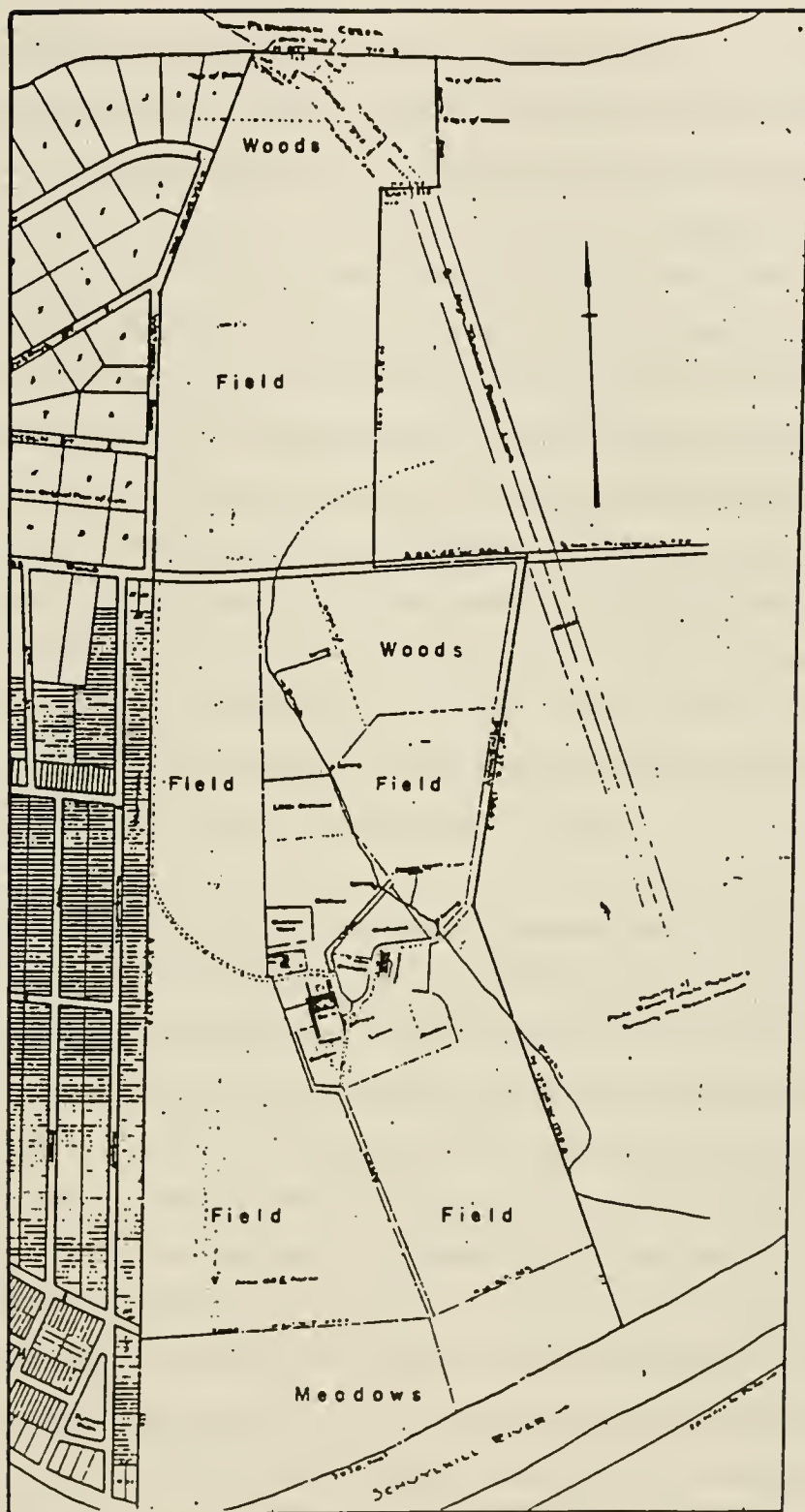


Figure 10: Site Plan showing layout of fields at Walnut Hill. James E. Kurtz, "Archaeological Survey and Assessment: North of the Schuylkill River," (Draft), U.S. Department of Interior, National Park Service, 1988.

Orchards, hay fields, and various grains and grasses were planted in the other fields. Wheat was grown in the field to the north of the barn.⁸ Orchards were also planted just north of the barn and main house (Fig. 10). A formal drive led from the main road, Pawling's Road, to the mansion house, while a separate drive was designated for the working part of the farm and led to the barn (Plates 9, 10 & 16). Although the two buildings were directly linked in terms of their proximity, the drives functioned as distinct circulation systems until they were connected at a later date, probably at some point in the late twentieth century (Plate 11). This established a division between the living versus working part of the farm. A dense wooded area defines the southern edge of the property near Pawling's Road, which serves as a screen or barrier to the entrance (Fig. 11). These woods represent a well-established, mature forest consisting of plantings/shrubbery such as poplar, "spice bush" and forest wildflowers ("Solomon Seal")—a classic southeastern Pennsylvania forest.⁹ The formal entrance drive was lined with walnut trees at one point and were supposedly a gift from Stephen Girard. A few are still standing along the stone retaining wall leading from the house to the barn (Plates 9 & 10).

From the exterior, the Walnut Hill barn appears as a coherent whole, although it was not initially built at this grand scale (Plates 17 & 23). The building was constructed in two distinct phases and, as a result, exhibits an unusual interior layout (Appendix E). Samuel Wetherill, Jr. was responsible for the initial construction of the barn building when he acquired the property in 1826. When his son, John Price Wetherill, inherited the estate he embarked on a number of later changes, circa 1840s, the period when the estate reached its heyday. Very little of the barn's original fabric was demolished since the 1845 addition incorporated the west gable end in its design. The exterior stonework along the exposed south (front) elevation was dovetailed to disguise the different construction phases (Plates 26 & 27). Retention of similar exterior details, interior arrangement, and structural framing system of the 1826 barn further reinforced the impression of a single massive structure. Constructed of roughly coursed sandstone with large corner quoins defining the edges, it measures 60 feet 2 inches by 116 feet 6 inches. On the interior, the building's layout

consists of two sections, each having its own stables, grain storage and threshing floor. This is emphasized by the retention of the original west gable end, which remained intact when the barn was enlarged and stands as a significant physical barrier between the two sections (Plates 71, 72, & 77). Except for the door opening on the original west gable end, now providing the only access between the two sections at the stall level, these sections essentially function as two separate entities (Plate 40). A large artificial ramp, supported by stone retaining walls, rises along the north elevation to the height of the threshing floor level (Plate 17). A series of underground vaulted rooms are incorporated into the south side of this bank. The ramp is not bermed against the barn's north stone wall but, instead, meets up with a level bridged section which creates a "carriageway" or passage below.¹⁰ The carriageway serves as a storage space for wagons and other machinery and allows direct access to the stables or vaulted rooms. Two gabled, wood shed extensions dominate the rear, north, elevation and are built over the "barn bridge" which lead to the third story threshing platform and hay-mow area.

Prior to Samuel Wetherill's acquisition of the Walnut Hill parcel, a log barn, measuring 40 feet by 33 feet, was cited in a 1798 tax assessment on Henry Pawling (III)'s property. Whether a smaller barn was already located at this site and Samuel Jr. either tore it down or incorporated it into his design is unknown. No physical or documentary evidence was found to support the theory of this previous structure being incorporated into the existing structure or the material being re-used in the new building. It is most likely that if a structure did exist at this location, it was torn down prior to the construction of Samuel Wetherill Jr.'s barn. A datestone located on the east gable end of the Walnut Hill barn claims that Samuel Wetherill, Jr. initially constructed the barn the same year he purchased the property:

Erected by
Samuel Wetherill 1826
Addition by
John P. Wetherill 1845
Solomon Kriebel, Carpenter
John Place, Mason

The U.S. Federal Census of 1850 lists Solomon Krieble as residing in Gwynedd Township, 76 years old, carpenter. John Place is listed as 72 years old, farmer, and living in Upper Providence Township. His son, Joshua Place, is also found; he is listed as 35 years old, stone mason.¹¹

The barn built during Samuel Wetherill, Jr.'s ownership was constructed of sandstone and measured approximately 40 feet 5 inches wide by 66 feet 5 inches long (Fig. 11). The barn's interior layout consisted of stalls to house cattle and horses at the lower level, as well as an abundance of storage space for hay, grain and farming equipment above. Originally, the roof was covered with wooden shingles, still intact and visible from the underside of the roof structure (Plates 44, 52-54, & 70). The roof was covered over by a standing seam metal roof at some later date, sometime after the 1845 section was added, which also displays a wood shingled underside. "Ribbon pointing" was used as a decorative mortar treatment on the sandstone facades, while "ridge pointing" articulated the later addition. Ribbon pointing is more difficult to execute, but it produces a more durable and visually impressive joint.¹² An earthen embankment, or ramp, was constructed along the north side of the barn, measuring approximately 33 feet across and 65 feet in length. Two stone vaulted rooms were incorporated under this ramp along the south side. The ramp did not continue up to the north elevation's stone wall, but connected to a level platform, or "barn bridge", which probably would have been covered by a shed section to shelter the bridge. Large double doors were located at the head of the rampway, centered on the north elevation, and opening into the third story threshing floor and hay mow area. The bridged section would have been open underneath, forming an 18-foot "carriageway" used to shelter wagons.

Five door openings, framed by small rectangular windows to either side, were equally spaced across the lower level of the south elevation (Plate 24). Half-openings were used, swinging outwards, which employ clenched nails and large iron hinges located on the left, or west, side of the doors. The ground level is several feet below the door sills. Sandstone

Ramp along the North side rose up to third story level, where threshing floor located. The ramp, set back from the building's elevation, formed an 18' "carriageway". A level platform, or "barn bridge", spanned the distance from the ramp to the large opening on the north elevation. A covered shed section probably would have protected bridge. Two stone vaulted rooms were built under the earthen embankment.

Ramp measured 33' wide by 65' long

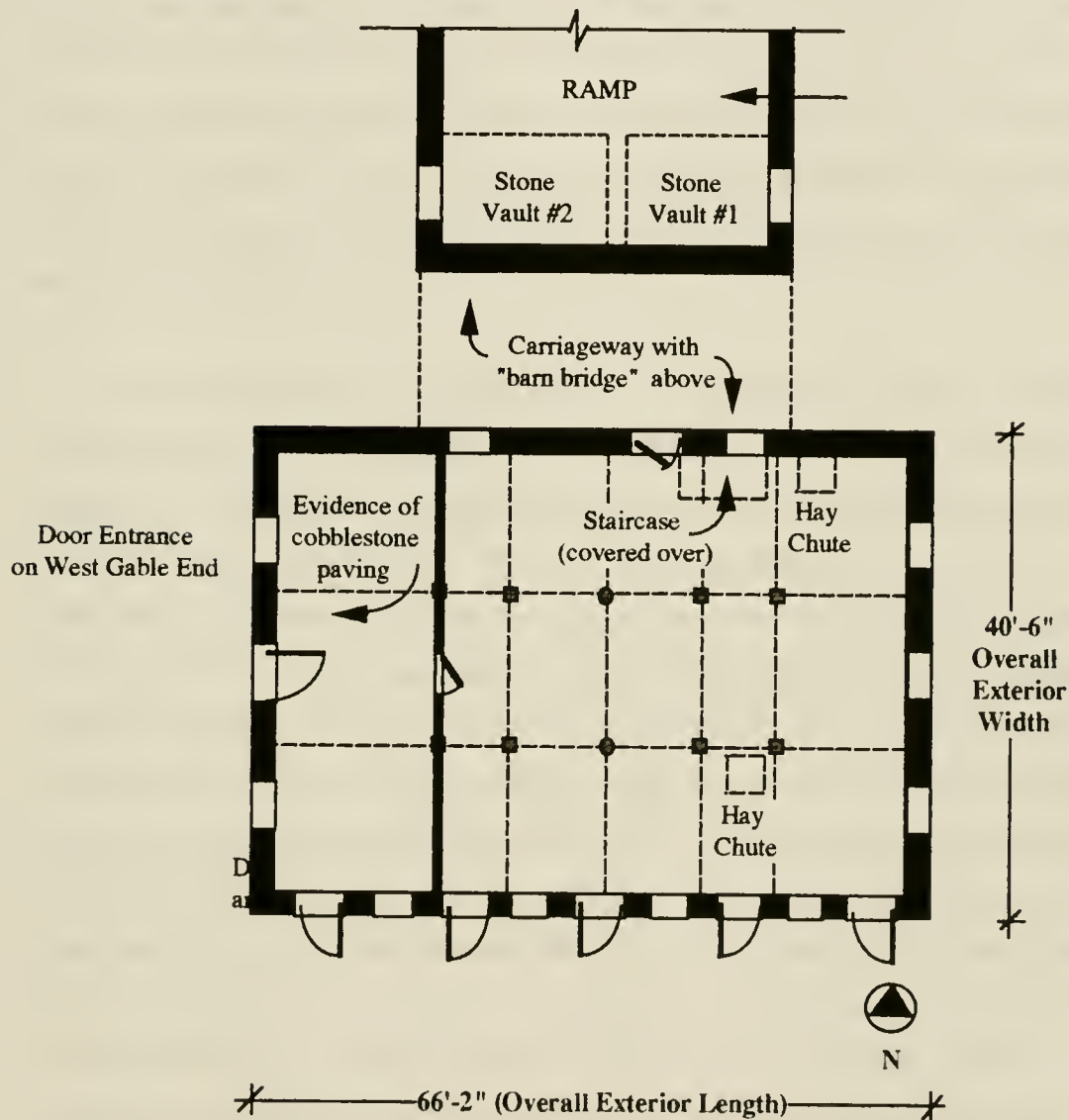


Figure 11: 1826 Ground Floor Plan of Walnut Hill barn (not to scale)

lintels appear over some of the windows, while the door openings employ rubble sandstone overhead. The second story, or middle level, uses a similar arrangement of door and window openings which are aligned with the lower level fenestration pattern, utilizing an interesting technique to maintain a symmetrical appearance. Two “blind” windows, or recessed stonework, take the place of two of the openings; a treatment which reflects the architectural sensitivity to the building’s overall impression.¹³ Two door openings were placed at the third floor and indicate the threshing floor level. These openings, which swung outwards, were conveniently placed so that the threshed hay could easily be thrown into the corral below. The upper level was defined by four rectangular window openings, which would have provided both ventilation and natural light for the large threshing floor and hay mow area (Plate 60).¹⁴

The east elevation faces the mansion and, as a result, displays a restrained, symmetrical appearance (Plates 11-13). The first, second and third floors have three symmetrically spaced window openings across the facade, all of which were aligned with each other. The window openings originally were screened by wood slat ventilators; some of the ventilators are still intact. The windows at the ground floor are presently covered over with plywood. When a window opening wasn’t possible at a particular location, recessed stonework and louvered ventilators were employed instead. The three windows at the second floor use this technique since the hay mows were located on the interior, making window openings impossible at this level (Plate 14). The recessed panel was screened by a wood slat ventilator to disguise the false opening. A large rectangular window, with glass panes, is centered in the gable end (Plate 15). It is capped by an arch and edged in decorative brickwork. Directly below this opening, a stone plaque was set into the masonry/stonework. It contains the dates of construction and the names of those responsible, including not only the Wetherill’s but also the carpenter and mason. The stonework has patches of a whitewashed surface, indicating that the barn may have been covered when it was first constructed. This would have created a striking appearance, reinforcing the decorative mortar joints and corner quoins. Literature of the period

supports this idea, stating that the Pennsylvania barns were commonly painted or whitewashed. The watercolor rendering executed during the barn's heyday in the mid-nineteenth century depicts the barn as completely whitewashed, with a cupola defining its peak (Plate 8).

The west elevation has a similar composition to the east elevation, but has been incorporated into the later addition and now functions as an interior partition. An exterior door was located in the center of the ground floor level which led into the stables (Plate 40). Windows along the upper levels employed the "blind" window treatment, with green painted wood louvered ventilators still in place in some of the panels. The upper gable end of the stone wall has been knocked down, making it impossible to determine if a similar arched window was positioned at its peak (Plates 71 & 72).

The interior arrangement of the 1826 barn consisted of stables at the lower basement level, grain storage at the middle level, and the threshing platform and hay mows at the third level. The stables were sheltered on the north side by the bank and, most likely, opened to an enclosed farmyard along the south elevation. This open corral served as a place to exercise and water the animals, and collect their dung. As cited in the previous chapter on Pennsylvania barns, John Nicholson, an early writer on the subject of agricultural practices, recommended the construction of a high fence to enclose a section of the barnyard. The ground should slope slightly, with the lowest area in the middle to collect the manure, which could then be spread on the fields as fertilizer. Nicholson also mentioned that a well should be nearby to supply water for the cattle.¹⁵

The 1826 stall area was later modernized to house cattle, with a concrete floor laid down, leaving scant evidence of the original layout of the stall areas. The original whitewashed stone walls and interior structural members are still intact which provide clues to the type of open stall that may have existed in this section before the metal stanchions and new floor was added (Plate 33). Empty mortises are found along several cross beam in the barn,

indicating that vertical posts probably divided the stalls into open partitions (Plate 37; Appendix E). Notches, or cuts, near the base of the squared wood columns suggest that horizontal members further framed the stall section. Three peg boards (two still intact with the impression of a third one) are embedded into the stonework along the east wall, and were probably used to hang equipment (Plate 34). A covered opening is evident in the ceiling along the northeast wall, having the dimensions of a previous stair opening (Plate 36). Although the design of the interior stalls varied greatly, it is possible to refer to agricultural journals and farm manuals to get some idea about the typical stable arrangement for a bank barn constructed circa 1820s. Typically, the stable floors were designed to slope from the middle to the edges at a rate of 1"=10' in order to allow proper drainage to channels, which led to cisterns for storage. Although a cistern was located in the north embankment it was used to store water, not manure from the cows. It is probable that the original flooring did slope along a similar incline, since drainage was a necessity. An archaeological study was undertaken by James E. Kurtz in 1988, entitled "Archaeological Survey and Assessment: North of the Schuylkill River," which included excavations to the Walnut Hill barn. One of Kurtz's test units included a section near the west end of the stables which was partitioned from the main stall area. It revealed a small section of cobblestone paving (Fig. 12 & Plate 39). A milking room was also added along the east side of the carriageway, under the north "bridge" section, and probably coincides with the modernization of the stall area.

Substantial stone retaining walls were constructed on three sides of the original 1826 ramp (south, east and west) to support the load of the built-up embankment and wagons passing above (Fig. 11). Along the ramp's northeast retaining wall there are remains of a grinding stone (cider press), with a grooved area and small lip along its perimeter (Fig. 14). Since apple orchards were part of the Wetherill estate, it could have been used as a cider press where apples were crushed and the juice was drained along the recessed portion. One of the "Wetherill Farm Account Books", covering the period from 1862-4,

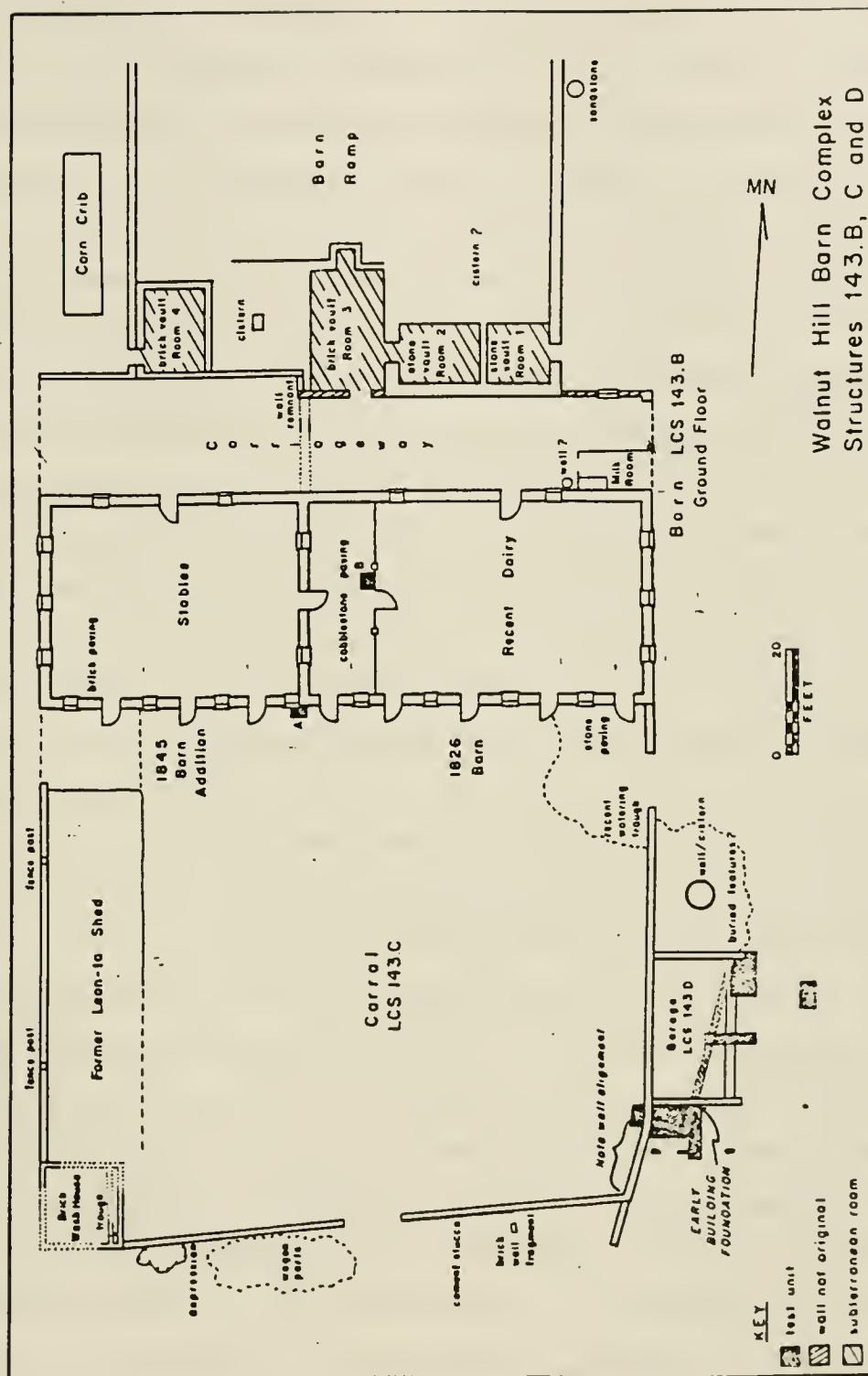


Figure 12: Plan of Walnut Hill complex showing archaeologists's test units. James E. Kurtz, "Archaeological Survey and Assessment: North of the Schuylkill River," (Draft), U.S. Department of Interior, National Park Service, 1988.

recorded the purchase of ten cider barrels.¹⁶ Two stone vaulted rooms were built into the bank along the south end and are still intact under the present embankment. One of the vaults (Stone Vault #1), a transverse stone vaulted space (east-west orientation) measuring approximately 11 feet 6 inches wide, is entered from the exterior east retaining wall (Plates 31 & 32). The floors are quite deep, approximately 5 feet below the level of the door sill, and joist pockets are visible approximately 3 feet below the door level.¹⁷ This vault may have been used as an ice cellar, due to its deep floor level and access from the exterior. The other vaulted room (Stone Vault #2) may have served as a root storage. It is adjacent to, and to the west of, the first vault. A masonry wall divides the two rooms and this vault is oriented in a north-south direction. Most farms had their own ground cellar for storing and preserving foodstuffs such as fruits, vegetables, animal fodder, milk, butter and baked goods. The primary purpose was to protect them from freezing during the winter months and maintain cool temperatures during the summer. This was accomplished by locating the cellar below the frost line.¹⁸ Written documentation supports the fact that it was quite common to build root cellars and ice houses under the ramp, as opposed to building a separate underground structure on the property, as early as the eighteenth century; a practice that continued well into the nineteenth century. An experimental farmer visiting from England described the incorporation of cellars under the ramp of a bank barn in Chester County “...arched, for turnips, potatoes, &c. to keep them from the most severe frost”.¹⁹ An article written by Amos Long, Jr. entitled “Pennsylvania Cave and Ground Cellars”(1960) states that these ground cellars, or “g’welb keller”, were typically incorporated into houses and barns built during the late eighteenth and early nineteenth centuries, consisting of a vaulted roof structure through the center.²⁰ These underground vaults, similar to the outdoor cellars, were rectangular in shape and ranged from 9 to 12 feet wide and 12 to 18 feet long. Entrances were either placed to the rear of the stable, providing direct access, or outside along the bank.²¹ The interior side walls, typically built of stone, were approximately 5 to 6 feet high with a vaulted brick or stone arch (about 7 to 8 feet from floor). They were normally whitewashed and had protruding stones which supported shelves. The room was often ventilated by a small opening near the top of the

wall.²² The ramp up to the third floor level creating a covered “carriageway” below, which provided an area to store machinery and allowed access to the vaulted rooms (on the north) and to the stall areas (to the south).

The middle level of the barn measures approximately 7 feet high and was designated as the grain storage area (Fig. 16). A reference in the Farmer's Assistant (1814) describes the benefits of a separate floor for the storage of grains:

It is most advisable also, to have a place to set apart in the barn for the purpose of storing away the grain after it is threshed. The bins for the grain should be made of hard plank to prevent the rats and mice eating through them, and should have lids which can be fastened down with padlocks.²³

A door opening along the north elevation, in the carriageway section, provided access to this level via a ladder (Plate 30). The covered stairway along the north wall of the stable level may have been an additional, or later, means of access to this level. The floor was divided into a simple three bay composition. The middle bay served as the enclosed storage area (with the threshing platform acting as the ceiling height). Seven bins, approximately 4 to 5 feet wide, were aligned in the center portion, with two partitioned spaces, partially intact, located on the east side of these grain bins (Plate 41). The two side sections functioned as the floors to the hay mows, which extended along the sides of the threshing floor and reached to the undersides of the roof (Plate 42).²⁴ Hay chutes, conveniently placed along the edges of the floor section, delivered hay and grain to the stables below.

The third floor served as the threshing floor, accessed by the ramp and barn bridge, which led to a large opening along the north elevation (Plate 46).²⁵ The door opening measures approximately 32 feet 5 inches wide and extends the full height of the wall to the top sill plate. Originally, the bridge section would have been covered by a rear shed section. Now it is sheltered by a more recent shed addition, which corresponds to the shed extending from the 1845 section. This arrangement allowed wagons to come, fully loaded with wheat or hay from the fields, up the slight inclined rampway and directly into the threshing floor level. In John Beale Bordley's book, Essays and Notes on Husbandry and

Rural Affairs (1799), he discusses the appropriate width of this threshing platform: “For giving room to turn waggons within the barn it is built thirty-six to forty feet wide.”²⁶ This way, hay could easily be unloaded into the hay mows on either side of the central threshing floor, which provided a tremendous amount of storage space. Grain was threshed on this large platform and either thrown down to the farmyard, through door openings along the south elevation, or sent down the shoots to the stall areas (Plate). A large “ventilator”, constructed of long vertical poles and horizontal braces, was located in the hay-mows to provide adequate ventilation for the stored hay:

The farmer of the older parts of Pennsylvania built very large barns in general, and to obviate the consequences of hay or grain heating, in a large mow, four poles or pieces of timber are set up in middle, so as to form within them a square space of about three feet. The poles are braced by cross pieces, at certain distances. Through the apperture thus made, the extra moisture in the hay or grain has a chance to escape, so as to prevent its being mowburnt...²⁷

A loft area, located on the southwest wall of the threshing floor, may have served as a small storage space (Plate 50). At the northwest end of the platform, wooden pegs project from the tops of two of the framing cross members (Plate 46). Remains of a metal chain and pulley system are still visible along the roof’s framing, directly above the threshing platform, indicating the only remnant of the horse-drawn, and later machine-powered, threshing device that would have been used in this space (Plate 54).

The barn was constructed using mortise-and-tenon construction techniques. At the beginning of the nineteenth century, this framing system was applied universally to construct both houses and barn buildings. Framing was modified shortly after the Civil War by the introduction of the “balloon frame”, which employed a lighter framing system of vertical studs and siding. Walnut Hill barn consists of a three-bay “H-bent”, or framing system, with each bent placed approximately 14 feet apart across the length of the structure.²⁸ A diagram of the typical bent in this section of the barn illustrates the composition of the structural members, location of hay chutes and integrated ladders used to access hay (Fig. 13). The typical framing system consists of two main vertical posts connected by a large cross beam that extends the width of the structure at the roof height .

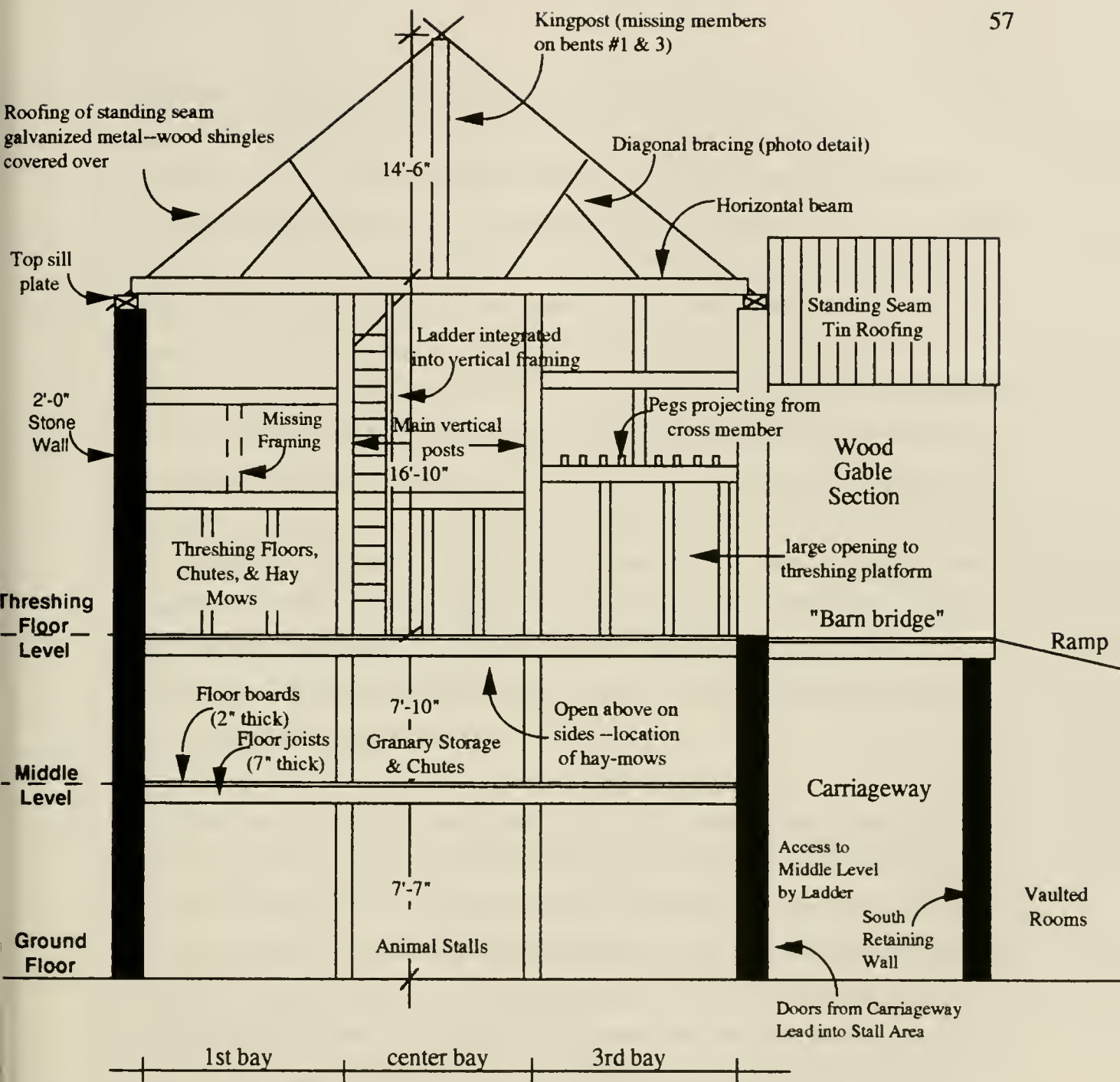


Figure: 13 1826 Section of Walnut Hill barn showing cross section of typical bent (not to scale)

This horizontal member is supported by the top sill plate that rests on top of the 2 foot wide stone walls. The vertical structural members are hand-hewn from heavy logs, approximately 9 inches thick, while the roof members are unhewn. The floors consist of heavy boards supported by sawn joists, approximately 7 inches thick, which run the width of the barn and provide extra rigidity to the vertical structural members. Ladders and hay mows function as integral parts of the original design of the framing system. The middle level is enclosed in the center bay, having a 7-foot ceiling height, and designated exclusively for the storage of different grains. Grain bins are arranged along the west side of this center bay, and hay chutes are conveniently located nearby, and extend from the threshing floor down to the stall area. The side bays at the middle level are open above, rising the full height of the roof, with the floor level used as the bottom of the hay-mows. This carefully thought-out arrangement promotes ease of distribution and saves on labor-intensive activities---the upper level is used to unload, store and thresh the hay (with threshed grains conveniently fed down chutes to either the middle storage area or stall level), the middle level is set aside for grain storage, while the lower level functions as housing for the animals (Plates 43-45, 47-48, & 52).

When John Price Wetherill took over his father's role as gentleman farmer, he was involved in a number of significant alterations to both the barn and mansion house. He worked on the addition to the mansion as early as 1836, while embarking on the expansion of the barn in 1845. The barn's addition practically doubled the size, adding approximately 50 feet 2 inches to the length. This section extended to the west and incorporated the exterior stone gable end as an interior divider between the two sections (Fig. 14). The ramp was also widened at this time, along with the south retaining wall, creating a carriageway under this portion measuring 22 feet 6 inches wide. The extended ramp may have been constructed in two phases--the first centered on the north elevation of the 1845 section and the second being an infill to connect the two banks. A slight depression in the ground near the midsection of the embankment provides physical evidence to support this hypothesis. Also, a rubble infill wall is constructed between the two south retaining walls,

Rampway leads up to third, or threshing floor, level. Four tranverse and longitudinal arched vaults are located underneath earth embankment along south side of bank.

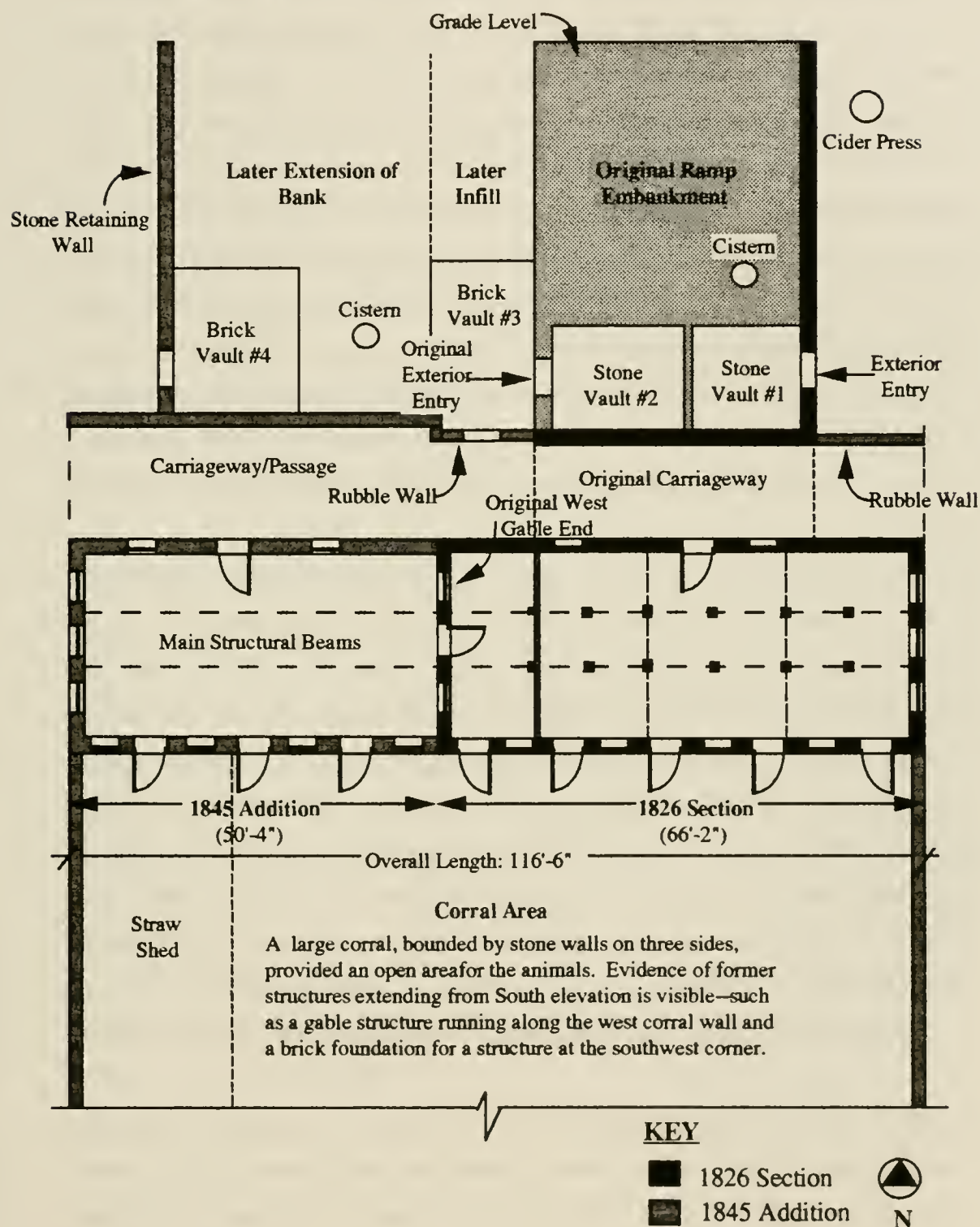


Figure 14: Overall Ground Floor Plan of Walnut Hill barn (not to scale)

marking the 1826 and 1845 sections, which further supports this two-phase progression. Two additional vaulted rooms were incorporated in this ramp, which employed brick instead of stone arches. The roof of both the 1826 and 1845 sections were originally covered with shingles, which are still intact and visible from the undersides of the rafters. This was replaced with sheets of standing seam terne plated steel at some later phase. The “Wetherill Farm Account Books, 1861-1880” contain a reference to repair work done on the barn roof in July 1862, which provides an estimate for the cost of purchasing shingles and lath.²⁹ An entry is made in the “Income Account” of Maria Janeway’s will that indicates repairs made to the barn and roof in June and July, 1897 by F. Logan; however, it does not refer to the materials. A cupola centered on the roof’s ridge was added sometime after its enlargement. The watercolor rendering shows a cupola along the barn’s roof, attesting to its presence. Physical evidence of its attachment was also uncovered by the Williamsport Preservation Training Center during its structural evaluation of the barn.³⁰

The north elevation, on the other hand, reveals a vertical seam in the stonework which is only evident from under the carriageway since the rear sheds cover the majority of this wall. Since no effort was made to disguise the stone’s joint, it can be assumed that the shed sections were added at this time. The north elevation of John Price Wetherill’s barn addition measured 50 feet 4 inches, resulting in an overall length of 116 feet 6 inches. A large double door opening was placed at the center of this facade at the third floor level, which opened onto the bridge platform and central threshing floor. Two gabled, wood shed sections were constructed over the 1826 and 1845 barn bridges, with a larger shed along the east (The west shed, 1845 section, has one large double door opening while the other consists of two double-doors.) The rampway, although it extends across the majority of the north elevation, was treated like two separate drives up to the different sections.

The south elevation stands completely exposed, fronting an open corral area for the cattle (Plates 21-23). A series of doors and windows were carefully articulated across the three levels, with a row of windows defining the upper level.³¹ The same fenestration pattern

was repeated across this facade, thus creating the impression that it was initially constructed in one phase. Upon closer inspection differences between the two sections can be distinguished on this elevation. Although the same sandstone was used, its coloration is slightly different; it contains more green and red stone and is not as uniform in appearance as the earlier sandstone.³² A distinct effort was made to conceal the seam in the stonework along the south elevation, where the original corner quoins were removed and the stones were dovetailed, or toothed together. Windows were placed vertically along this seam to further minimize the visibility of the joint (Plates 26 & 27). Sandstone lintels are found over some of the window openings on the 1826 section, while bluestone is found over windows in the later addition. Mortar joints on the two sections were also distinguished, with ridge pointing used on the later section. Yet, the south elevation achieves a sense of cohesion through the balanced placement of openings across the entire facade, thus disguising the fact that the barn functions as two separate structures on the interior. Some of the windows at the first and second level employ bluestone lintels, while the remaining door and window openings have no lintels overhead. Large sandstone quoins articulate the corners and appear a little more finished than the remaining sandstone surfaces. The first floor is composed of three double dutch doors, with windows placed on either side. The second story, the location of the grain storage, consists of two door openings balanced by windows on each side. They are aligned with the openings below and repeat the same arrangement as the 1826 section, although no recessed stone panels were employed in this later section. Two door openings, employing half-openings, are aligned at the third floor level. They fall directly above the second floor window lintels, leaving about 1 foot between top of windows and door sills. Four windows are placed above the third floor level, making a total of eight windows across the upper portion of this facade (Plate 27).

The west elevation mimicks the composition of the 1826 east gable end (Plate 18). The windows along this facade were originally covered by wood-louvered ventilators, only present on two of the second floor windows. The facade was designed in a three bay composition at the different floor levels and culminated in a large arched window in the

upper gable portion. Stone quoins define the edges (Plate 20). Bluestone lintels are found on the first and second floor windows, as well as the center window on the third floor. The ridge pointing is still partially visible on this facade, although suffering an advanced state of deterioration.

The interior of John Price Wetherill's addition utilized the same layout as the 1826 section--incorporating stalls at the lower level, a granary at the middle level, and a central threshing floor and side hay-mows at the third story (Figs. 15-17). The stall area was originally designed to house horses. This section was not significantly altered, making it easier to determine how these stalls were intended to function (Fig. 15). A central passage, measuring approximately 12 feet wide and marked by a 16 inch thick stone foundation wall, extended lengthwise (east-west) at this level. Open stalls, divided by whitewashed partitions, are placed along the north, south, and west walls (Plate 61). Two stalls located in the southeast section are enclosed with doors leading into these spaces (Plates 63 & 64). The southwest stall area has a water trough attached to the stone foundation wall to the north (Plate 65). Evidence of sloped, brick paving was uncovered in this area during James Kurtz's excavations, indicating the original flooring (Plate 66). The central passage was aligned with the original west gable end doorway, to the east, and connected to the 1826 stall area. This served as the only direct access between the two sections. A ladder was placed to the south side of the door, with a hay chute located directly above the opening (the hay chute continues up to the third floor height, centered along the original west gable end). Another door was built along the north wall, providing direct access from the carriageway. Three doors were designed along the south elevation which led out to the enclosed corral area. A stairway to the upper level was located along the northwest side of the stall area. It is not clear whether this was part of the original 1845 design, since a doorway was located at the middle level which was probably reached by a ladder. A 22 foot wide carriageway separated the barn's north elevation from the rampway. A photograph of this carriageway, taken in the 1940s by Charles Dornbusch, shows a large machine set up in the 1845 section. A mechanical shaft runs the length of the ceiling, and a

Ramp extended to the west when barn enlarged circa 1845.
Two brick vaulted rooms (Vaults #3 and #4) added under new
section, with one connected to an earlier stone vault (Vault #2)

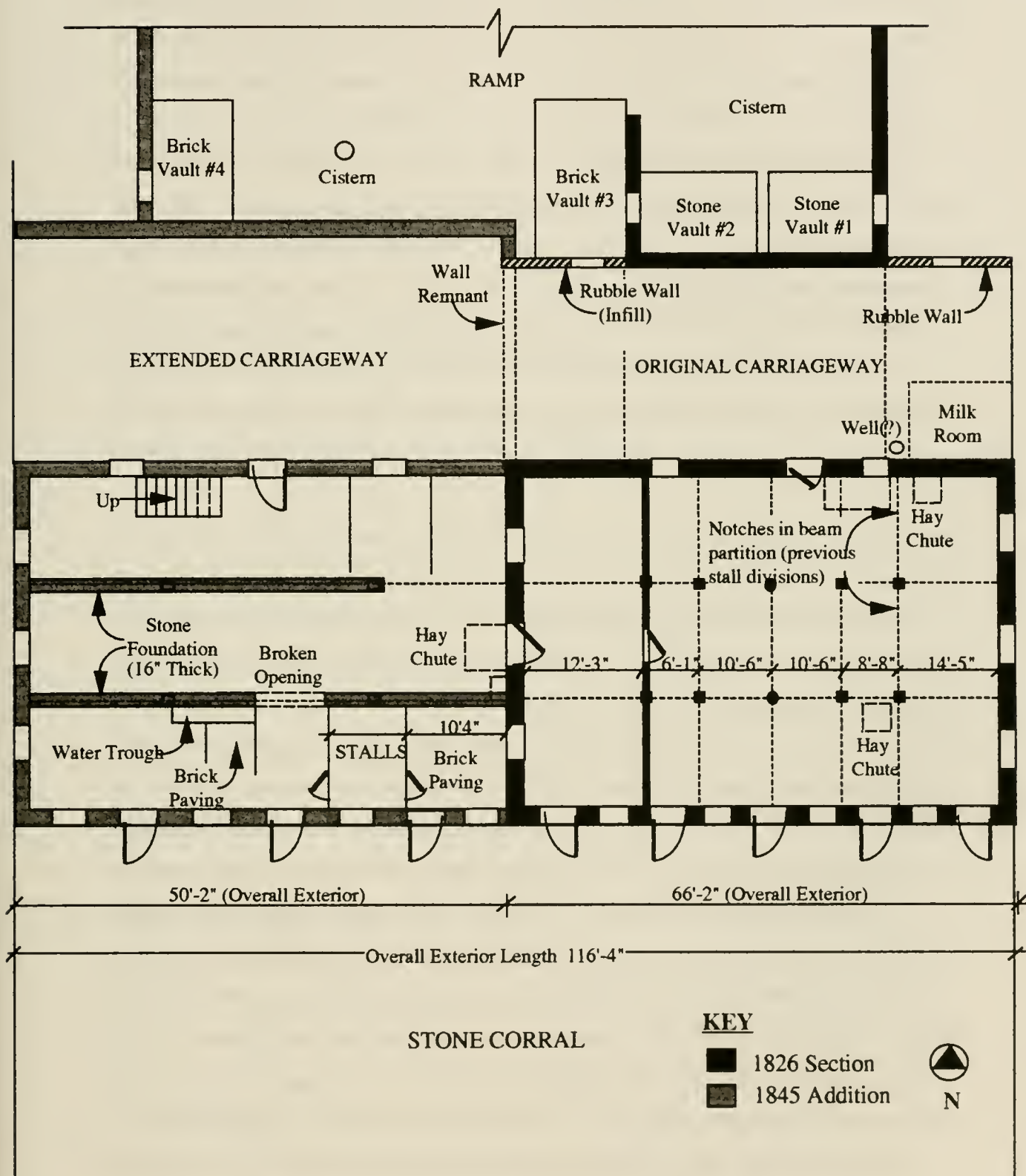


Figure 15: Ground Floor Plan of Walnut Hill barn (not to scale)

large mechanically-driven device is set up in the space (Plate 57). This could have served as a threshing machine, which was run by either horse- or steam-power. Two vaults were incorporated into the extended embankment, which were oriented in the same manner as the vaults in the eastern (1826) section. The vault to the east (Brick Vault #3) is roughly 13 feet 8 inches by 22 feet 8 inches and is aligned along the west edge of the original ramp (Plate 58). This vault may be a later addition, since it corresponds to the ramp infill above. An opening connected vaults #2 and #3 along the east wall and a small air/access shaft is located at the upper part of the north wall. A fourth room (brick vault) was located along the ramp's west retaining wall, with access from an exterior door (Plate 59). However, they differ from the vaults in the 1826 section in that the walls and barrel vault are constructed of brick. A cistern, where rainwater was collected and stored, was located in between these two underground vaulted spaces (Plate 60).³³

An enclosed farmyard area, consisting of a low stone wall on three sides, extended from the south elevation and created an open area for the animals to feed (Fig. 12). An opening was centered on the south stone wall, and other openings were provided along the side walls (east and west) near the barn. The west wall has several pocket openings for joists, located approximately 2 to 3 feet above ground level (Plate 28). Nine pockets are evident in the stonework and appear to be found every 3 to 4 feet apart. The northwest section has remains of a concrete foundation, about 4 feet by 10 feet. In the southwest corner, a brick foundation wall is visible as well as remains from a concrete trough. Concrete slabs are located in the ground across most of the length of this wall, except where the concrete foundation and brick foundation wall is located. It is difficult to determine what was original and what portions were later additions. There is also a trace of a previous gable roofline evidenced in the stonework at the west end of the barn wall, which extends to the top of the middle level window. This is the remaining visual evidence of the gable building that once stood along this west wall. A photograph taken in the 1940s by Charles Dornbusch shows a two-story wood building, or "straw shed", that existed along this wall (Plates 23 & 25). The east stone wall has a small section that extends approximately

8 feet from the barn's south elevation; the stone is covered with concrete and is capped by a concrete slab. The wood post, about 6 feet high, has an iron pintel on the upper north side. A stone lean-to is located on the southern part of this wall and faces outside of the farmyard; this lean-to represents a more recent addition. The north and south inside walls are stuccoed-over, the upper part of the west inside wall is stuccoed, and a wood roof covers the structure (which has been rebuilt with plywood and asphalt shingles). The stone wall continues at the south end of the lean-to, angling inwards and extending about 6 feet past the south wall. The stone wall along the south side has an opening at the center marked by two concrete pillars; the pillar on the east side has the date "1910" inscribed on it. One of Charles Dornbusch's photographs, circa 1940s, shows a drive leading through this pillared opening from the south field (Plate 23).

The middle level of the 1845 barn section consists of a similar three-bay composition as the 1826 middle level (Fig. 16). The center portion serves as grain storage, having a ceiling height of approximately 7 feet, and the two side aisles function as the floor to the hay-mows. The granary section measures approximately 14 feet across and consists of three storage bins placed along the east partition. A hay chute and ladder were located on the other side of this partition, providing a convenient arrangement between distribution and storage--grain was dropped down shoots and delivered to the bins. These bins, measuring between 6 to 8 feet in width and 8 feet in depth, employed wood boards on sliding tracks to hold the various grains, such as oats and barley (Plate 67). The hay-mow along the east side was partially enclosed, creating an area 12 feet 6 inches wide by 17 feet long. A door along the south end of the west partition opened into a large hay chute, which extended to the threshing floor. The staircase along the northwest wall continued up to the third floor threshing platform (Plate 70).

The third floor, arranged in a three-bay composition, consists of a central threshing floor and two side hay-mows, referred to as "sink-mows", which descend below to the middle level floor height (Fig. 17). A platformed area covers the southeast section of the east hay-

Ramp

Barn Bridge Above Carriageway

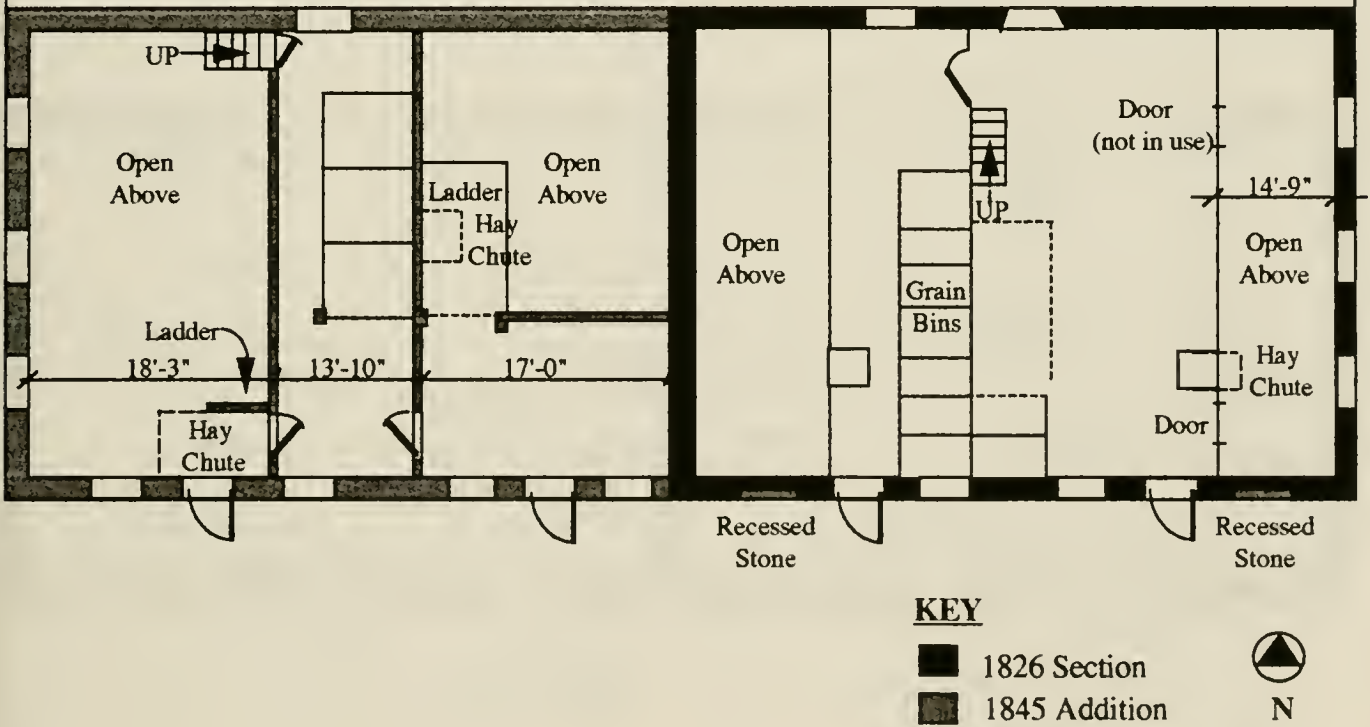


Figure 16: Middle Level, or Granary, of Walnut Hill barn (not to scale)

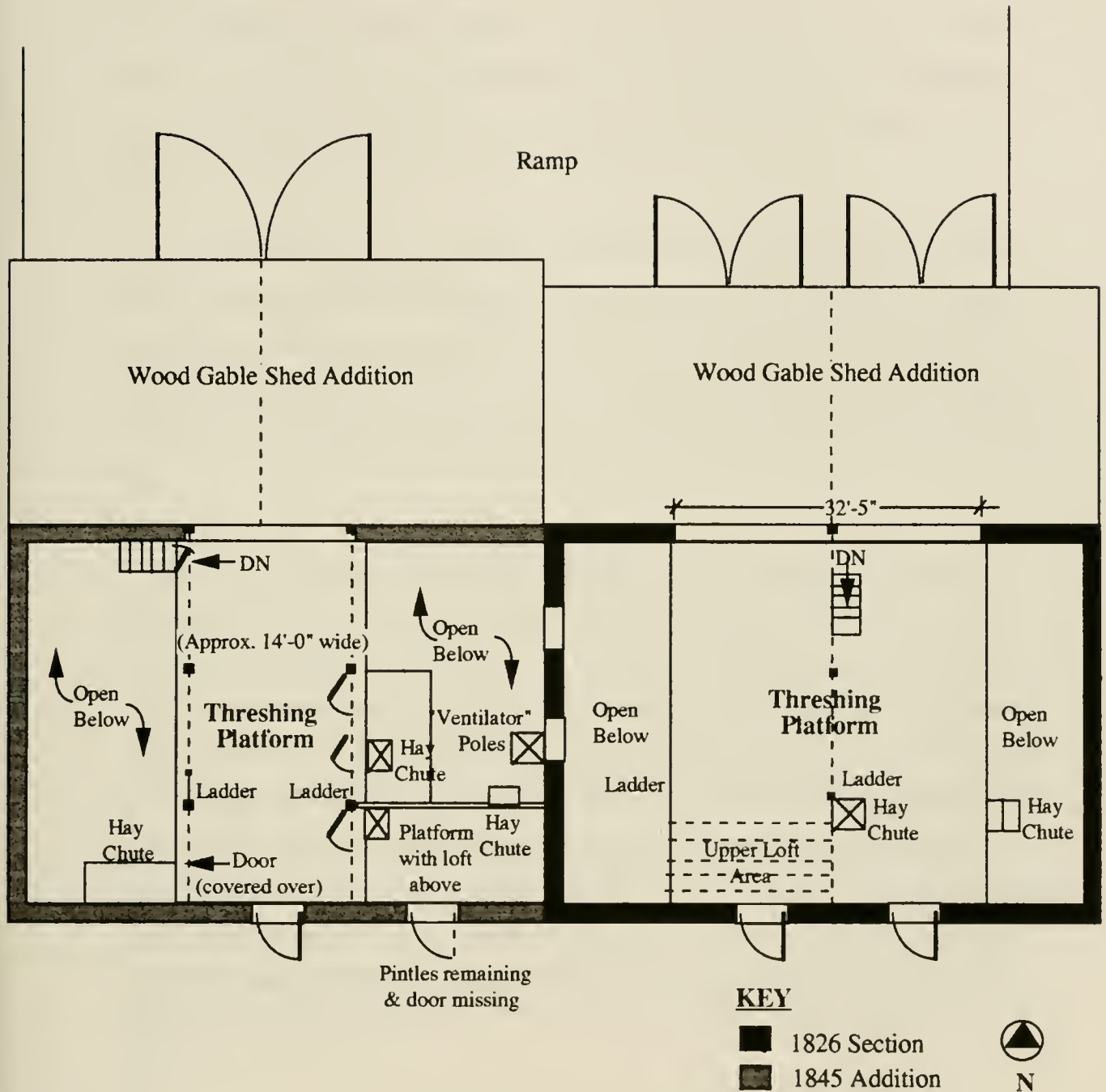


Figure 17: Third Level, or Threshing Floor, of Walnut Hill barn (not to scale)

mow. A loft was built above it, creating a 7- foot high enclosed space. Ladders are integrated into the vertical framing which make it possible to retrieve hay when the mows are well-stocked. Two doors were placed along the south elevation, one near the platform section and one at the end of the threshing platform (Plate 75). A 13 foot wide opening was centered along the north stone wall, providing enough width for wagons to turn enter the platform and turn around after unloading (Plate 69).

The 1845 framing system employed a similar three bay H-bent composition. A cross section depicting the east bent illustrates the typical arrangement of hay shoots, ladders, and structural members (Appendix E). Unlike the 1826 section, the lower portion of the framing members were covered by horizontal wood boards, which had doors opening into the hay chutes. A platform area covered a portion of the east hay-mow (Plates 71, 73, 75-78).

The barn's construction in two distinct phases resulted in the separate functioning of the 1826 and 1845 sections. Each part remained self-sufficient, containing their own stalls, grain and hay storage, and threshing platform. John Price Wetherill's expansion suggests that the barn's storage capacity needed to accommodate increased agricultural production on the estate during the mid-nineteenth century. On the exterior, his addition achieves a sense of a balanced, coherent whole due to its repetition of the 1826 fenestration patterns. The building's evolution becomes apparent upon closer examination--after noticing such evidence as the retention of the original west gable end, dovetailing of the stonework on the south elevation, and vertical seam under barn bridge on north elevation. The immense scale of the barn and efficient layout of the interior attests to its integral role within Walnut Hill's agricultural complex.

Conclusion

The Walnut Hill barn is an impressive intact example of a “double-decker” barn, a type rarely encountered in Montgomery County. Upon entering the barn, one discovers the immense size of this three-level structure. Although the overall design and interior layout of the Walnut Hill barn are characteristic of the Pennsylvania bank barn—such as the ramped entrance and large double doors on the rear elevation, lower stall area, central threshing floor, and side hay mows—it stands as a unique barn building, influenced by a wide variety of factors. The building’s lack of the essential forebay, according to the traditional definition of the “Pennsylvania bank barn”, is the first clue to its difference. The 2-foot thick sandstone walls and corner quoins that compose the exterior elevations are yet another distinctive feature of the barn, an appropriate material for the construction of such a large structure as well as a visible indication of social status. Barns in the Montgomery County region were more commonly constructed of masonry up to the first floor level, with vertical wood sheathing above, or employing brick and stone gable ends.¹ The use of stone construction had various precedents, found in both Germanic and English building traditions.² Walnut Hill’s design intermixed a number of divergent forces, although principally influenced by the English bank barn and the agricultural literature of the period. The British concern for a compact, multi-purpose barn was often reiterated in the farming journals written during the agricultural revolution of 1800-1825. Walnut Hill barn’s double-decker design reflected a combination of influences, with its origins in the Swiss technique of framing the intermediate level to create its double-decker size.³ The double-decker in Pennsylvania is associated with the Quakers practice of continually expanding their “Lake District” bank barns, eventually resulting in a three-story structure.

Transformed to its present appearance as a result of two distinct building phases, 1826 and 1845, the length was expanded from 66 feet to an overall measurement of 116 feet. The south elevation displays a conscious arrangement of door and window openings,

resulting in a restrained, symmetrical appearance. The north elevation was originally composed of an artificial ramp and open bridge section, which evolved into an extended bank area leading to two large shed extensions that cover the bridge platform. The stalls were divided in use--the 1826 section was modernized to serve as a modern dairy, with concrete floor and metal stanchions, and the 1845 section remained fairly intact as a stable for horses. The bank grew to include four vaulted rooms altogether which commonly functioned as ice houses or root cellars. A corridor, or carriageway, ran lengthwise under the bridge section measuring 18 feet in the older portion and 22 feet in the later section. This enclosed area functioned as a storage area for farm machinery and wagons, and served as an access way to the underground vaults or stable areas. The middle level in both barn sections were set aside entirely for grain storage. Two threshing floors, running along the center of the third floor space, operated in each section of the barn. Wagons were driven up the ramp and hay was unloaded into the sunken hay-mows; an important aspect of Walnut Hill barn's efficient design. Based solely on its scale, carefully detailed execution, and overwhelming interior structure, the barn at Walnut Hill is exceptional.

Indeed, in many ways a cathedral resembles a great embellished barn, which is why the interior of a barn, with its tall posts and streaks of light, recalls the dignified gravity of a Gothic nave.⁴



Plate 1: Example of a "Sweitzer" bank barn near Fogelsville in Lehigh County, PA. Shows the wood "forebay", or overhang, at upper level and the stone construction below where the stables are located. Charles Dornbusch, *Pennsylvania German Barns*, Volume 21xxi (Allentown, PA: Pennsylvania German Folklore Society, 1958), 81.



Plate 2: Interior of a barn in Lancaster County, PA (1804) showing typical stall arrangement at basement level. Framing of the structure consists of squared timbers running lengthwise and dressed vertical columns. Coat of lime whitewash keeps livestock area sanitary. Sloping bins on right are mangers for the cattle; aisle for feeding service located beyond first tier. Charles Dornbusch, 137.

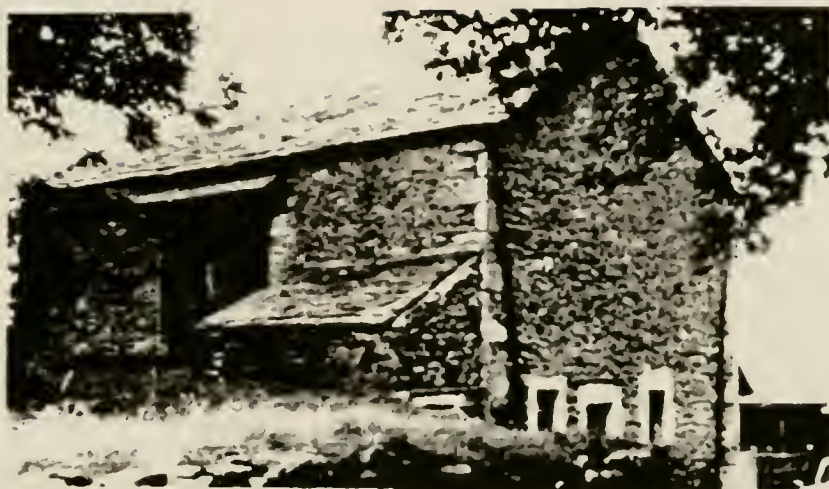


Plate 3: Rear ramped entrance elevation of an "English bank barn" near Cartmel, Lancashire. R.W. Brunskill, Vernacular Architecture of the Lake Counties (London: Faber and Faber Limited, 1974), 83.

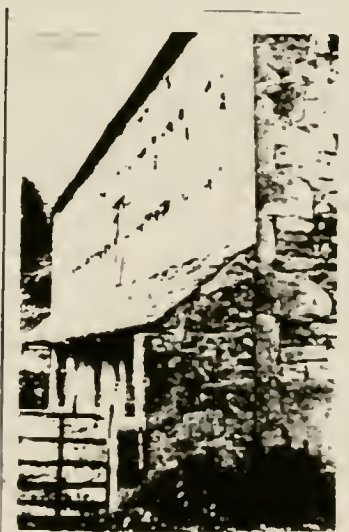


Plate 4: Bank barn near Crook, Westmorland. View of lower, or farmyard, level showing canopy protecting cowhouse and stable doors. "Winnowing door" located above projecting canopy at center. R.W. Brunskill, Traditional Farm Buildings of Britain (London: Victor Gollancz Ltd., 1987), 115.

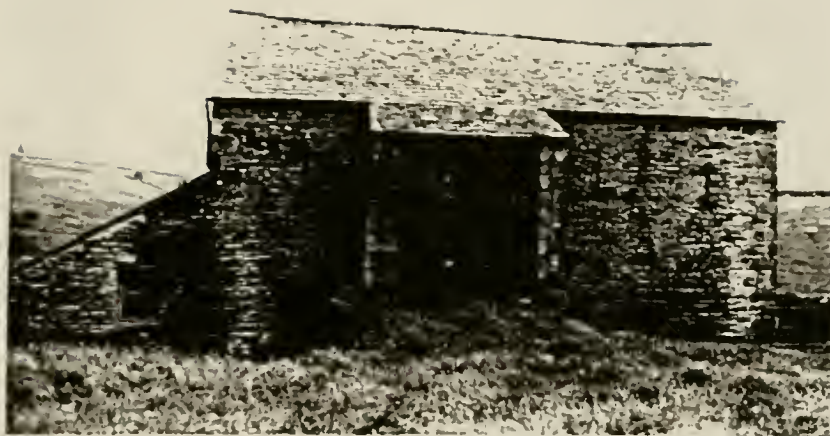


Plate 5: Bank barn near Shap, Westmorland. View of upper, or barn, level. Since the slope was not great, an earthen ramp was built up to the doors. Access was provided under the ramp, forming a "carriageway". R.W. Brunskill, Traditional Farm Buildings of Britain, 115.



Plate 6: Aerial view of Walnut Hill Farm, circa 1970. Valley Forge National Historical Park Files, Administration Building, Valley Forge, PA.



Plate 7: Aerial view of Walnut Hill estate showing location of mansion (right) and barn (left). Shows barn with shingled roof and shed addition along west corral wall. Valley Forge National Historical Park Files, Administration Building, Valley Forge, PA.



Plate 8: Watercolor rendering of estate, mid-nineteenth century, showing whitewashed barn with cupola. Also depicts cows and sheep grazing in foreground, along Schuylkill River. Source unknown, n.d., Valley Forge National Historical Park Files, Administration Building, Valley Forge, PA.



Plate 9: View of formal drive looking east towards mansion



Plate 10: View of formal drive looking southwest towards barn.
Walnut trees once lined this drive, with only a few remaining.



Plate 11: East gable end of 1826 barn



Plate 12: Close-up of east gable end showing symmetrical layout and recessed stone panels at middle level



Plate 13: East gable end, photograph taken by Charles Dornbusch in the 1940s. H.A.B.S. #PA-5350-3 (Washington, D.C.: Library of Congress).

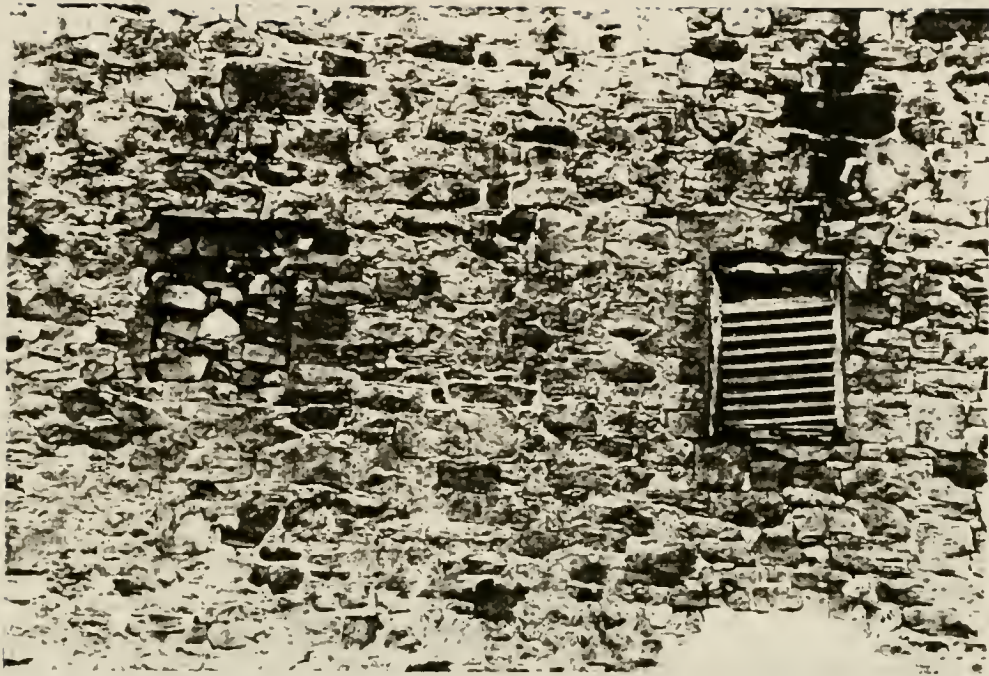


Plate 14: Detail of east gable end stone recessed panels and louvered frame to disguise false opening



Plate 15: Detail of window in gable end of east elevation with datestone incorporated below



Plate 16: View of working drive looking south, showing rampway along north elevation of barn and west gable end of 1845 section.



Plate 17: North and west elevations, photograph taken in 1940s by Charles Dornbusch. H.A.B.S. #PA5350-2 (Washington, D.C.: Library of Congress)



Plate 18: View of 1845 west gable end showing carriageway, shed additions and ramp along north side. 1845 gable end displays same composition as 1826 east end.



Plate 19: Detail of west gable end windows showing bluestone lintel (left) and sandstone rubble support (right)



Plate 20: Detail of corner quoins along southwest edge of barn



Plate 21: View northeast of south and west elevations, showing corral wall extending from south side



Plate 22: South elevation, looking north, showing orderly arrangement of facade. From a distance, facade appears as coherent whole. Distinctions between sections become noticeable upon closer inspection

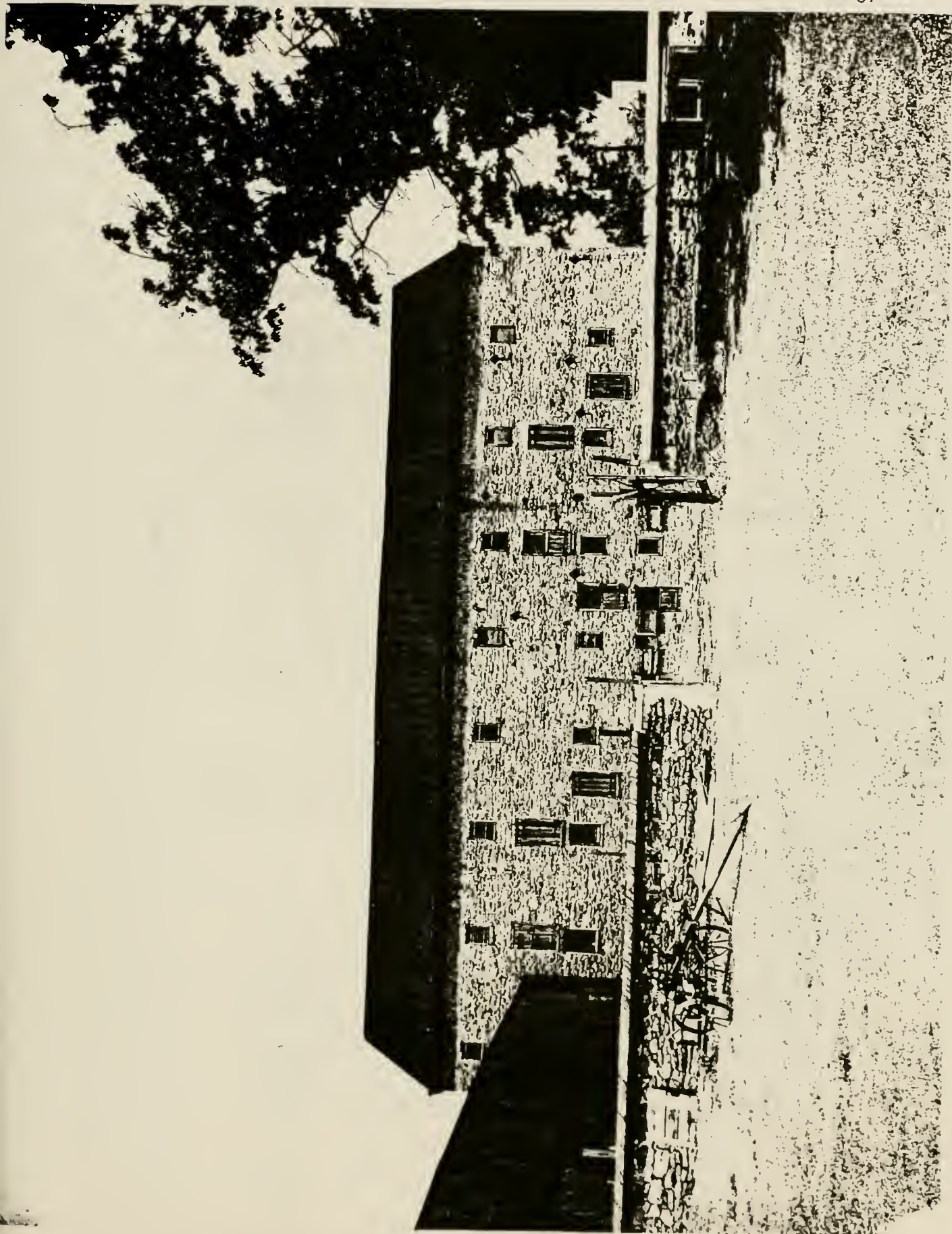


Plate 23: South elevation, taken by Charles Dornbusch in the 1940s.
H.A.B.S. #PA-5350-1 (Washington, D.C.: Library of Congress)

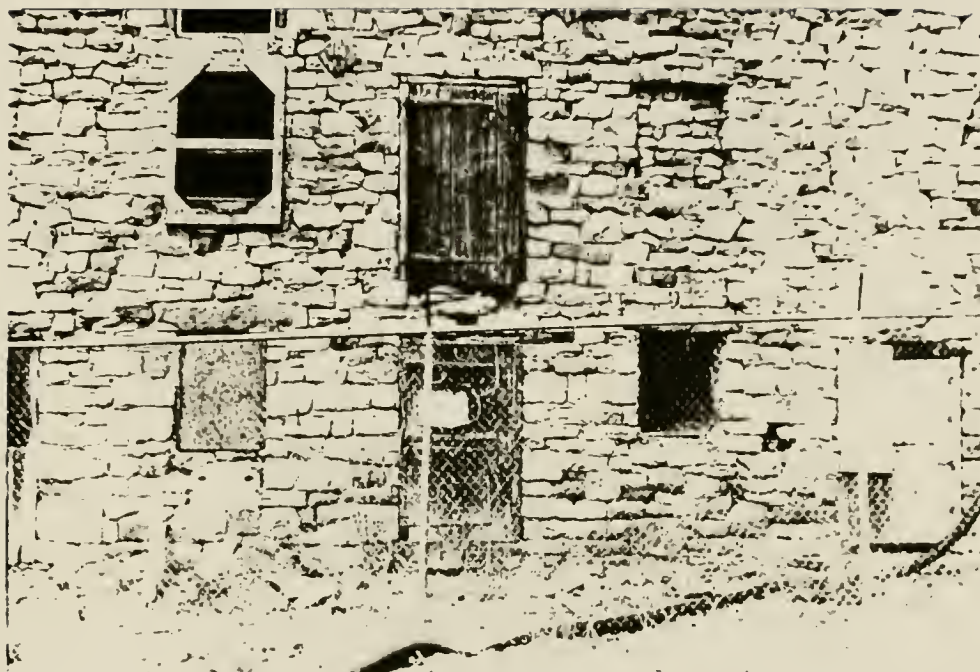


Plate 24: Close-up of 1826 section of south elevation, showing typical arrangement of openings at ground floor and middle level



Plate 25: Close-up of 1845 section of south elevation, showing evidence of former "strawshed" roofline which extended along west wall of corral

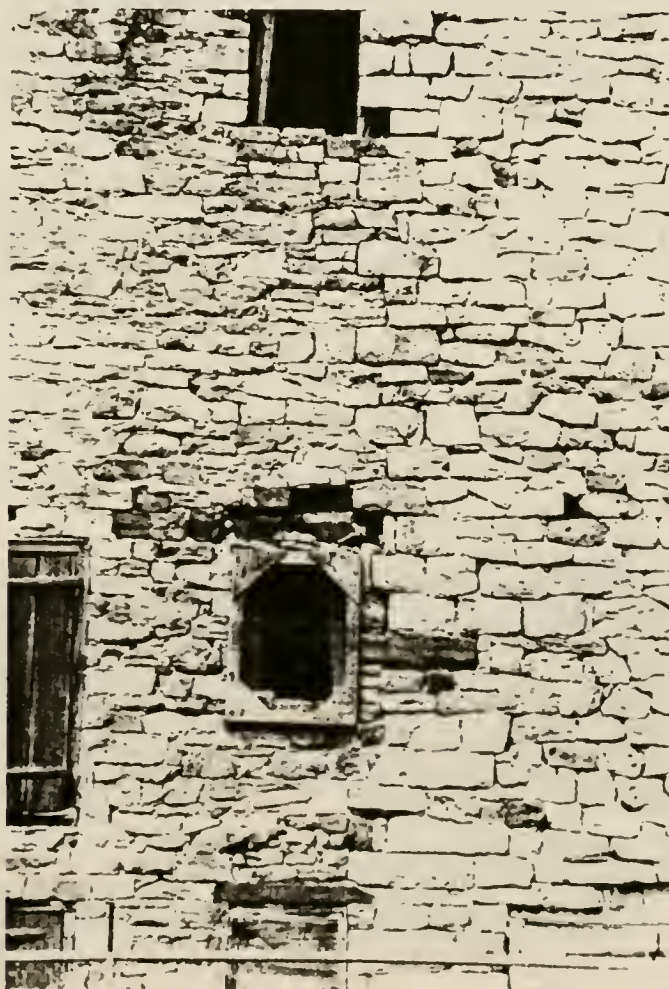


Plate 26: Detail of stone "dovetailing" on south elevation

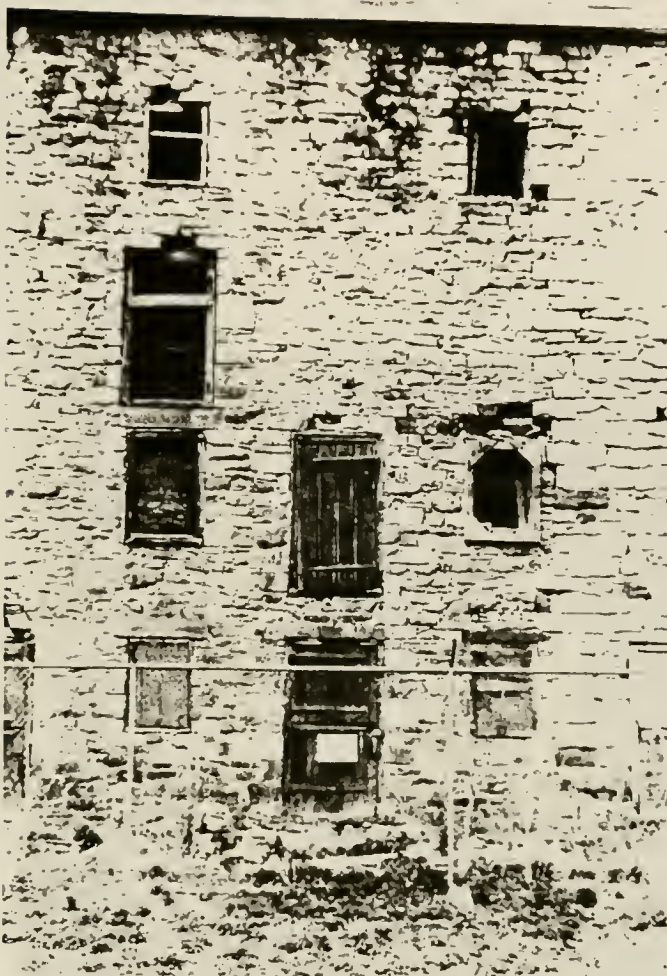


Plate 27: 1845 section of south elevation, showing typical arrangement of openings at the three different levels, with a row of windows at top to illuminate threshing floor



Plate 28: View of west corral wall with pocket openings in stonework



Plate 29: View of north elevation from carriageway in 1826 section, showing door leading into stables and window above into middle level, or granary



Plate 30: View of north elevation from carriageway in 1826 section, showing door to middle level, which was probably been reached by ladder. A staircase did exist along northeast end of stable area but has been covered over



Plate 31: Stone vault #1 in 1826 ramp section, showing depth of room and whitewashed surfaces. This vault was accessed by an exterior door opening along southeast side of ramp retaining wall



Plate 32: Close-up of stone vault #1



Plate 33: View of 1826 stall area looking east. Section has been modernized to serve as a dairy operation, however, original structural system remains intact.



Plate 34: Pegboard embedded in east wall of 1826 stall section. Three pegboards are placed across the wall and would have been used to hang equipment

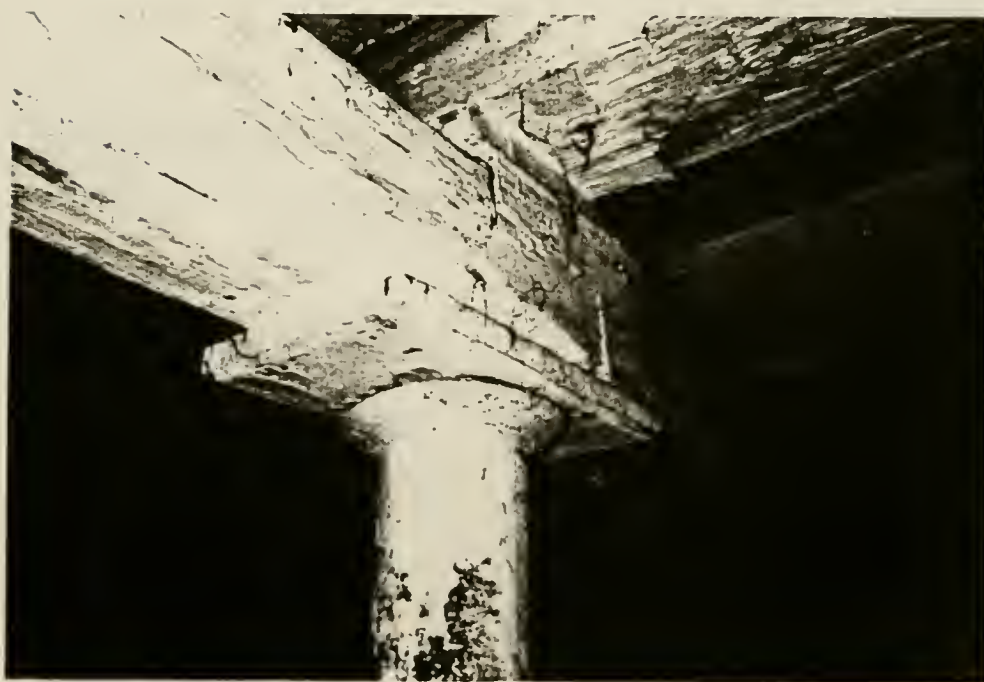


Plate 35: Detail of cast iron column and chamfered beam in 1826 stall section



Plate 36: 1826 stall section showing evidence of closed staircase along northeast end, which would have led up to granary level



Plate 37: Detail of notches found in cross beam of 1826 stable ceiling framing. Holes may indicate location of earlier stall dividers (Refer to Appendix E for location of notches)



Plate 38: Trough and hay feed still intact in west partitioned section of 1826 stall area



Plate 39: Evidence of cobblestone paving in west end of 1826 stables, uncovered during archaeologist's investigations. Refer to Figure 12 for location of test unit.



Plate 40: Original exterior door of 1826 west gable end, which now connects to 1845 stable addition. This door opening provides the only direct access between the two sections.



Plate 41: Middle level of 1826 section showing grain bins along midsection



Plate 42: Middle and third floor levels of 1826 section, looking west, showing relationship of "sink-mow" and threshing platform



Plate 43: Threshing floor of 1826 section, looking east, showing window openings on east gable end and arrangement of typical framing (3-bay, "H-bent")



Plate 44: View of east hay mow up to threshing floor and large opening on north elevation of 1826 section



Plate 45: East hay mow of 1826 section, showing close-up of hay chute extending along side of threshing floor to floor below



Plate 46: Threshing floor of 1826 section, looking north into rear shed addition. Two sets of double doors lead onto ramp. Note enclosed staircase (center) located in middle of platform. Pegs project from overhead cross beam above stair landing.



Plate 47: Threshing floor of 1826 section, showing close-up of hay chute and ladder alongside which is integrated as part of framing



Plate 48: Threshing floor of 1826 section with view of hay chute opening, located along south side of platform. Note left space above which covers part of south elevation.



Plate 49: Detail of 1826 threshing floor framing, showing evidence of cut cross member



Plate 50: 1826 threshing floor, looking south towards loft space. "Winnowing" door on south elevation provides draft during threshing, while windows above provide additional source of natural light

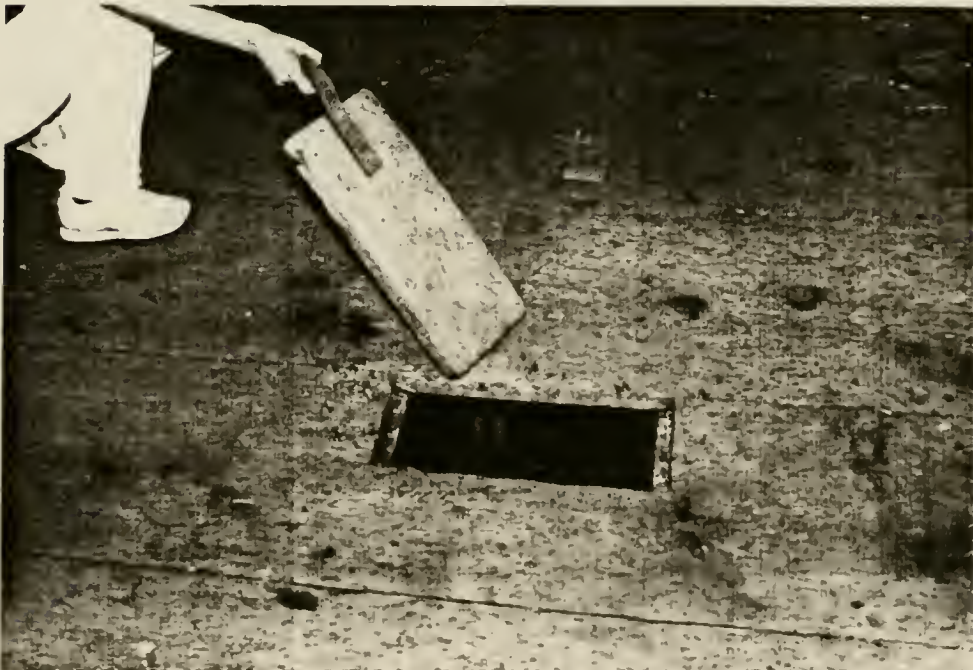


Plate 51: 1826 threshing floor, showing trap door in floor boards, used for depositing grains to bins below



Plate 52: View west of 1826 structural framing, which employs a 3-bay H-bent design and system of diagonal braces at roof level. Note original west gable end in background.

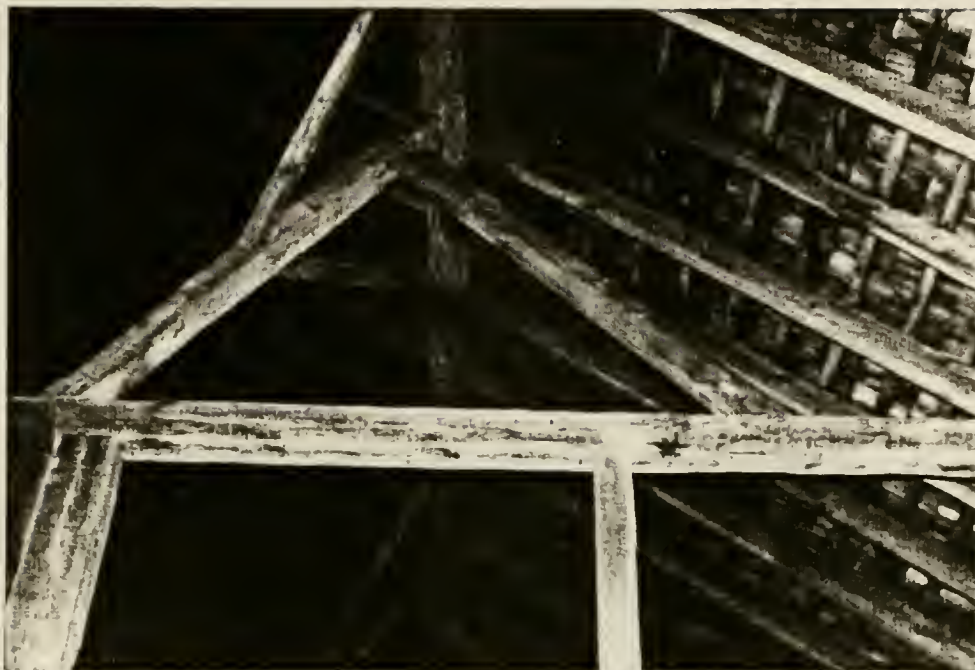


Plate 53: Close-up of 1826 structural framing at roof level



Plate 54: Close-up of 1826 roof above threshing platform, showing chain attached to framing which may have served as part of pulley system to unload hay wagons. Note shingled underside of roof.



Plate 55: North elevation in carriageway section, showing exposed vertical seam between 1826 and 1845 sections. No attempt was made to disguise the joint on this elevation as opposed to south elevation.



Plate 56: North elevation in carriageway of 1845 section, showing door into stables and door above to granary. Staircase along north wall of stall area provided access to upper levels. Note pieces attached to ceiling joists of barn bridge; location of machinery shown in Plate 57.



Plate 57: 1845 carriageway looking east, showing machinery setup, taken in 1940s. H.A.B.S. #PA-5350-4 (Washington, D.C.: Library of Congress)



Plate 58: Brick vault #3, which runs in north-south orientation. View north towards shaft opening.

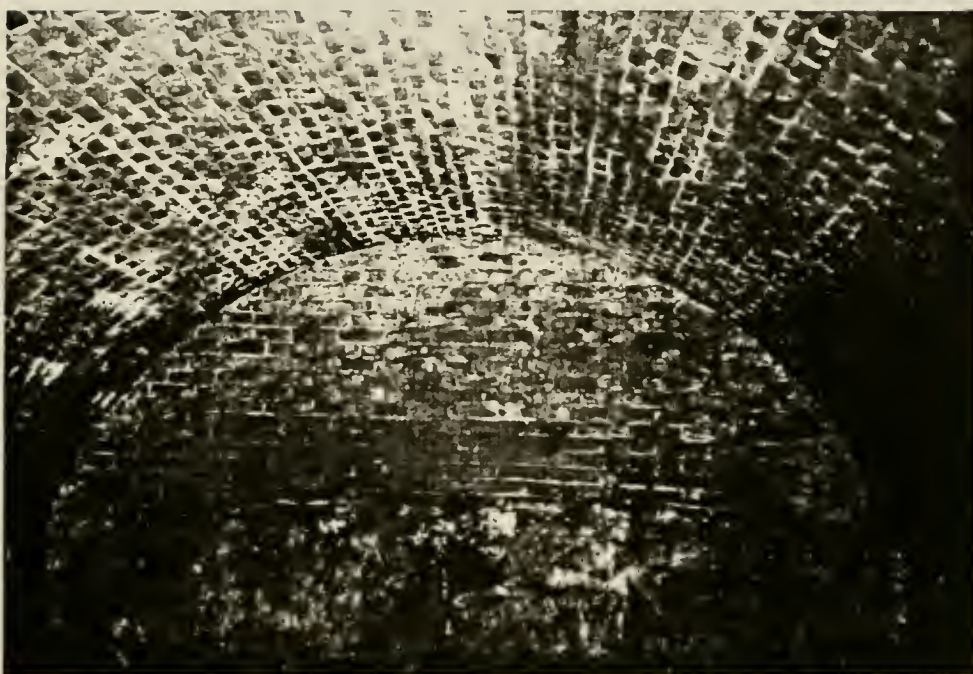


Plate 59: Brick vault #4 (north-south orientation) looking towards north end wall. Arched vault slopes downwards to north.

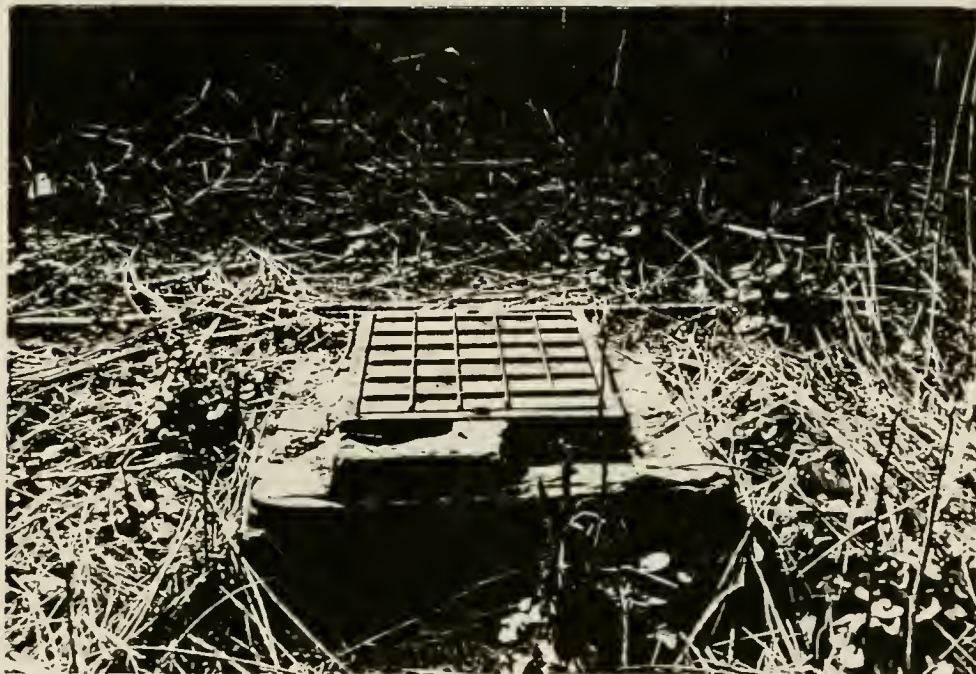


Plate 60: Location of cistern along 1845 north rampway



Plate 61: 1845 stall section, looking east towards original west gable end door. Arrangement consists of center aisle and stalls along north, south, and west walls.



Plate 62: South stall area in 1845 section, showing broken stone foundation wall at midsection



Plate 63: Close-up of half-opening into enclosed stalls along southeast section of 1845 stable area



Plate 64: Close-up of vertical slatted door into second stall along southeast section of 1845 stables



Plate 65: View of open stalls along southwest section of 1845 stables. Note built-in trough and sloping ground level.



Plate 66: Detail of sloping brick paving in southwest stall section uncovered during archaeologist's investigations



Plate 67: Middle level of 1845 section, showing grain bins with sliding horizontal boards running along tracks on sides



Plate 68: Detail of grain bin section showing evidence of cut diagonal brace along cross beam



Plate 69: Threshing floor level of 1845 section , looking towards south elevation. Shed section and barn bridge in foreground.



Plate 70: West hay mow of 1845 section, looking northeast, showing enclosed staircase on north wall



Plate 71: Threshing floor of 1845 section, looking southeast, showing typical H-bent, horizontal boards along lower part. Note "ventilator" poles in hay mow



Plate 72: Close-up of ventilator poles. Note broken section of original west gable end



Plate 73: Threshing floor of 1845 section, looking southwest, showing typical bent and horizontal boards along lower portion



Plate 74: View of west hay mow, looking southwest, showing door opening to farmyard below



Plate 75: 1845 threshing floor, looking south, showing impression in stonework across platform section of south elevation. Possibly location of loft space (similar to 1826 section). Note loft space to left, located above east hay mow.



Plate 76: East side bent of 1845 threshing floor, showing detail of mortise-and-tenon joinery and numbering system on pieces.



Plate 77: 1845 threshing floor, showing both bents located on sides of platform with view to original west gable wall. Note shingled underside of roof.

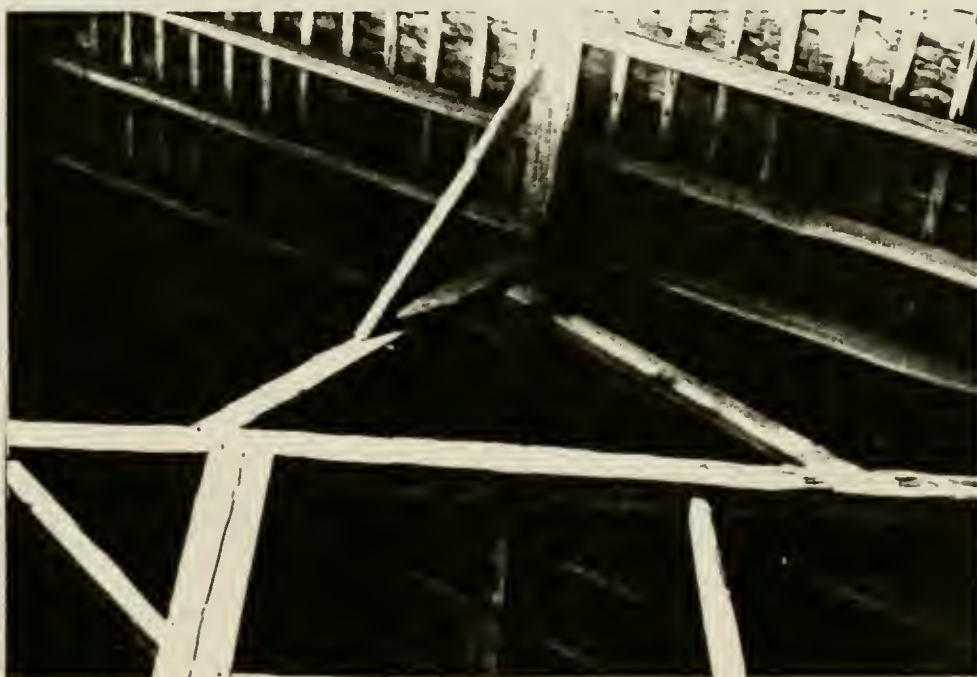


Plate 78: Detail of diagonal braces at roof level of 1845 barn

Appendix A:
Soil Types in Lower Providence
Township, Montgomery County, PA

Birdsboro silt loam (BnB2)

The Birdsboro series consists of deep, well-drained, reddish-brown silt or silty clay loams, which formed from old stream sediments washed from uplands underlain by red shale and sandstone. Located above the flood plains occupied by Rowland soils. Typically, level or gently sloping and occupy small areas along major waterways in northern part of Montgomery County; specifically on upland benches along the Schuylkill River and Perkiomen Creeks.

Soils are medium to strongly acid and are moderately permeable. They have high available moisture and moderate to low natural fertility. "Limitations are few if they are used for growing field crops, vegetables, or hay, or if they are used for pasture." This soil is well-suited to "corn, wheat, barley, vegetables, alfalfa, and orchardgrass. It is used mainly for field crops, including winter small grains, and hay." (92).

Lawrenceville Silt Loam

This soil is moderately permeable and has a high water table in late fall, winter, and early spring. It is well-suited to corn, soybeans, ladino clover, timothy and bluegrass. (112)

Penn-Lansdale loams (PIC2)

This soil type consists of Penn and Lannsdale soils. They have moderate to moderately rapid permeability and moderate to low available moisture capacity.

" These soils are used for fruit, commonly grown field crops, hay, and pasture...These soils are fair for corn, apples, peaches, winter small grains, and alfalfa. They are also suitable for hay and pasture consisting of drought-resistant grasses and legumes." (130).

Rowland silt loam (RwA)

The Rowland series has deep, moderately well-drained or somewhat poorly drained, nearly level silt loams above the normal level of the flood plains. This soil has a high water table, with moderate permeability and slow surface drainage. This soil is usually farmed with the adjacent soils. (136-7).

(Condensed Soil Survey, Montgomery County, Pennsylvania, United States
Department of Agriculture, Soil Conservation Service, Reprinted by Montgomery County Conservation District, June 1986, 92, 112, 130, 136, and 137.)

Appendix B:
Chain of Ownership
Walnut Hill Farm

Lyle F. & Mary C. Boulware
to
United States
December 20, 1984
\$435,000.00
57 A.
Montgomery County Deed Book 4755-2177

Heirs of Maria Janeway
to
Lyle F. Boulware
October 24, 1949
\$15,000.00
57 A.
Montgomery County Deed Book 2034-559

The heirs of Maria Janeway agreed to sell the 157-1/2 acre "Walnut Hill" parcel to Lyle F. and Mary C. Boulware.

Maria L. Janeway
to
Grandchildren
September 16, 1890
Montgomery County Register of Wills No. 3278

Her will directed that her estate be placed in trust for her six children and that upon the death of the last of the six children, the estate should be divided between her grandchildren:

" I direct my said Trustees to collect the rents and income of the residue of my estate and after the payment of all taxes...to pay over the net revenue and income to my two daughters Maria K. and Rachel W. in equal parts so long as they shall live or remain unmarried. Upon the death or marriage of either of my two daughters then I direct my Trustees to pay to the survivor or the one remaining unmarried...

I direct my said Trustees to allow my house and grounds adjacent known as "Walnut Hill" exclusive of the farm to remain as the same now is and to allow my husband to have the free use and enjoyment of the same for his natural life in common with my said two daughters...or until either of them shall marry. In case of the death or marriage of either of my said daughters the survivor or the one remaining unmarried as the case may be shall have the free use of the said Walnut Hill for her natural life in common with her said father...to be taken to include the use and enjoyment of the necessary grounds for gardens, the green houses, orchards, woodlands, waters and ways appertaining to the said Walnut Hill exclusive of the said farm adjoining, and all the silver, glassware, furniture, beddings, horses, carriages and harness appertaining to the said Walnut Hill Mansion...

Second. That the said Maria K. Janeway shall have the right to take and receive such of the farm products as may be needful for the household purposes as specified by a certain lease made the 3d day of April 1883 between Maria L. Janeway and Isaac Houck...

Third. That the said Maria K. Janeway shall have without charge the use of stalls for her horses or for friends who may visit her, also hay and straw for the same manner as is guaranteed and agreed to the late Maria L. Janeway in and by a certain agreement dated April 3d 1883 made between Isaac Houck and the said Maria L. Janeway."

Her will includes a brief inventory and assessment of the Walnut Hill estate:

"Estate of Maria L. Janeway, dec'd."

Inventory and Appraisement

Filed October 30, 1890

Household furniture, silverware, etc. in Mansion	
at Walnut Hill Lower Providence, Mont. Co.	500.00
Horses, Wagons, Harness, etc.	110.00
Farm Stock	511.00
Stocks, Bonds, & Mortgages	32609.02

Included in Maria L. Janeway's will is an extensive schedule of Income Accounts, Expenses and Disbursements relating to the operation of "Walnut Hill" farm. The following offers a detailed listing of expenses (ie: repairs, seeds) and income of the estate after her death, covering the period from 1891 to 1902:

"First Account"

Jan. 16, 1891 "Towers and Gotwalls"
for Lumber

Apr. 25, 1891 Charles H. Logan, labor
F. Shunk, labor

April 7, 1891 Isaac Houck, Sale of
Wheat

Isaac Houck, Milk Money for
Feb'y.

Sale of two Walnut Trees

Jan. 5, 1891 2,000 lbs. Phosphate for
Farm

Feb. 28, 1891 Repairs to Farm Barn

"The Second Account of Augustus J. Rudderow and Price W. Janeway, Executors of the Last Will of Maria L. Janeway, Deceased"
(Filed February 5, 1892)

Income Account

June 12, 1891	Milk money for month of May from Isaac Houck	63.00
July 8, 1891	Milk money for month of June, Isaac Houck	80.02
Aug. 10, 1891	Milk money for month of July, Isaac Houck	30.00

"Schedule A" Income Account*

Isaac Houck (1892)

May 4, 1892	David Landreth for seeds	9.60
Mar 7, 1894	Clover seed	24.00
Apr 25, 1894	Potatoes	10.50

* other entries refer to repairs to farm, labor expenses for building fence at farm, painting farm house, lumber bill, and miscellaneous seeds purchased. There is also two entries for fire insurance companies--"Mutual Fire Insurance Company of Montgomery County" and "Union Mutual Fire and Storm Insurance Company".

"Fourth and Partial Account" -- "Schedule A"-Income Account
(Book 60, Page 295, Filed 8/13/1902)

-Cost of digging Cistern at Farm	37.00
-Cost of Engine	75.00
-Cost of Pipe	87.50

"Schedule B"-Disbursements

July 4, 1897	Plowing Garden	5.00
Dec. 8, 1897	Plowing Garden	8.00
June 7, 1900	Florence Schunk, three days	3.75

"Schedule C"-Expenses

Mar 5, 1897	Farm, Planting Willows	7.50
Mar 22, 1897	Farm--Seed	29.05
Mar 31, 1897	Farm--Potatoes	2.00
May 13, 1897	Farm--Mutual Fire Insurance Co., Mont. County Assessment	
	Farm--Union Mutual Fire and Storm Insurance Co.	

June 5, 1897	Farm Repairing Barn-- F. Logan	33.85
July 20, 1897	Farm, Barn Roof, repairs, Logan	191.31
July 20, 1897	Farm, Hardware-- Benjamin	13.45
July 20, 1897	Farm, Work on House-- F. Schunk	20.00
Sept 28, 1897	Farm, Phosphate	34.00
Mar 31, 1898	Farm-Seed, Johnson & Stokes	15.30
June 13, 1898	Farm, Repairs--Logan	20.01
June 14, 1898	Farm, Porch Ceiling-- A.E. Trestle	
July 1, 1898	Farm, White Lead-- Wetherill and Bro.	
Sept. 27, 1898	Farm, Fencing, Wire & Staples	
Sept. 27, 1898	Farm, Repairing Barn Wall--Garner	7.75 14.00
Sept. 27, 1898	Farm, Repairing Roof-- Logan	12.78
Oct. 4, 1898	Farm, Building Fence	
Oct. 15, 1898	Farm, Wire Fencing	
Oct. 15, 1898	Farm, Seed, Johnson & Stokes	
Jan. 12, 1899	Farm, posts, H.W. Walker	
Jan. 12, 1899	Farm, Lumber--Gotwals	

"Schedule C"-Expenses

Apr. 18, 1899	Farm, Potatoes, Landreth & Son	
Sept. 7, 1899	Farm, Painting Roof	
Oct. 12, 1899	Farm, Seed Wheat, Mitchell	
	Farm, Seed Wheat, Landreth	
Nov. 29, 1899	Farm, Seeds, Rye, Johnson & Stokes	
Jan. 22, 1900	Farm, Part Freight on Manure	
Oct. 29, 1901	Farm, Planting Apple Trees-- J.B. Bushong	

Court of Common Pleas

to

Maria L. Janeway

December Term, 1877, No. 500

Philadelphia County Court of Common Pleas No. 1

This was an in equity suit entitled "Wetherill vs. Wetherill", dated 4 June 1878, which awarded the "Walnut Hill" tract of 157-1/2 acres to Maria L. Janeway, daughter of John Price and Maria Kane Wertherill.

Maria Kane Wetherill, deceased
 to
Children
 1877
Philadelphia register of Wills No. 680

Maria K. Wetherill appointed her son, John Price Wetherill, and daughter, Rachel, as the executors of her estate. Her will directed that the estate be equally divided between her children. Her daughters, Rachel and Elizabeth, "may have the opportunity to provide for themselves another home", giving them sixty days after her death to find other accommodations.

John Price Wetherill, deceased
 to
Maria K. Wetherill, wife
 July 21, 1853
Philadelphia Register of Wills No. 214

John Price Wetherill appointed his wife, Maria K., son, John P. Wetherill Jr., and friend, Eli K. Price, as the executors of his last will and testament. His son, John P. Wetherill, Jr. was given the store in Front Street, near Arch Street. He bequeathed his personal property, including all his furniture and household goods, at "my country place at Perkiomen" to his wife, Maria Kane Wetherill, where she continued to reside until her death. His "Last Will and Testament" makes reference to "Stock at farm, as per inventory in file" valued at \$4,317.58. Unfortunately, no inventory is on file in the Philadelphia Department of Records where his will is recorded. Included in his will is an account of rent received from several tenant farmers during the year 1853, which included Jn. Kellogg, J. Howard, J. Sweeny, and J. Lennox.

Rachel Wetherill, deceased
 to
Children
 1844
Philadelphia Register of Wills No. 36, 65-102

Rachel Wetherill's "Last Will and Testament" ordered her estate divided, and permitted the sale of properties by the executors of her will. Money from the proceeding sales would be distributed equally between her children--John (Price), William, and Rebecca, the heirs of Samuel P. Wetherill and Charles Wetherill deceased. In effect, each received 1/5 of a share of the proceeds.

John (Price) Wetherill was awarded a tract of 157-1/2 acres, being the same premises which Samuel Wetherill, Jr. purchased from the executors of Henry Pawling (III) in 1826.

An extensive inventory of the household items of "Bakewell Farm" (known as "Fatlands" estate) was included in Rachel Wetherill's will, appraised April 20, 1844. It includes a list of personal clothing, stocks and loans. It also mentions four insurance policies on four different properties: 419 Market Street; Barn, Montgomery County; Property, Burlington; House 90\$, Barn 40\$ at Clover Hill. Another citation to insurance policies might possibly apply to the barn at "Walnut Hill": "Perpetual Insurance on Barns in Montgomery Co....70.--". Although it proves the fact that the barns were insured against fire (a major concern during the time), there is no mention of the insurance company's name or policy number.

Samuel Wetherill, deceased
to
Rachel Wetherill, wife
1829
Philadelphia Register of Wills No. 113

He bequeathed his Philadelphia residence and his country estate, "and also my Farm called the Bakewell Farm in Montgomery County" to his wife, Rachel Wetherill. All his other property was bequeathed to his five children to "share and share alike"; no partition of the real estate took place until after Rachel Wetherill's death in 1844. It is important to note that the will mentions a "Perpetual insurance as per inventory...\$1903.67" but Samuel Wetherill, Jr. requested that no inventory or appraisal be made on any of his personal property.

Levi Pawling & James Milnor, Executors of
Henry Pawling (III), deceased
to
Samuel Wetherill, Jr.
April 1, 1826
\$7,875.31
157 A. 81 P.
Montgomery County Deed Book No. 41-587

Levi Pawling and James Milnor were named the executors of his estate. They were responsible for selling this parcel to "Samuel Wetherill of Philadelphia, gentleman". Wetherill Jr. purchased the "messuage" (residence) and that part of the property where Henry Pawling resided for a total of \$7875.31.

Henry Pawling (III), died
to
sell
July 25, 1817
Montgomery County Register of Wills No. 4978

Henry (III)'s will directed his executors to sell his plantation and tract of land, on which his son William resided and on which he lived:

“ I do authorize and empower my executors hereinafter named and the survivor of them to sell for the best price that can be obtained either at public or private sale as they shall think proper my plantation and tract of land as well as that part now in the tenure of my son William as that whereon I reside supposed to contain two hundred and fifty xxxxx acres with all the improvements and buildings thereon-the sale to be made in a reasonable time after my decease...the proceeds of which sale as well as the residue of my estate I dispose of as follows.

I give and bequeath to Sarah Butler my housekeeper a milk cow to have her choice out of my flock..”

Henry Pawling (III)’s will included an “Inventory of the Goods and Chattels of Henry Pawling, Esq.”, filed December 3, 1823. An excerpt of farm-related citations follows:

-one waggon.....	5.--
-Seven Sheep.....	14.--
-Six Hogs and Six Pigs.....	26.--
-four Milk Cows.....	60.--
-Half of Stock of Young Cattle in hands of Tenant.....	25.--
-Eighty seven bushels and 20 Wheat.....	122.11
-Thirty [] and eighteen pounds of hay.....	24.20
-Forty [] Bushels and 12 [] corn.....	20.04
-Ninety five Bushels of Oats.....	33.25
-Seven and half Bushels of Buckwheat.....	4.12

Henry Pawling (II), deceased

to

Henry Pawling (III), son

November 18, 1791

Montgomery County Register of Wills No. 4976

His will directed that portions of the 500 acre tract be granted to sons John, Nathan, and Henry (III):

“ I give and devise unto my son John Pawling his Heirs and Assigns forever thirty seven Acres of land adjoining the tract I have given him by Deed, the line thereof to begin at a Beech tree near the River Schuylkill which Tree is a corner of the said tract I gave him, thence down the several courses along the said River and from thence up the several courses agreeable to a survey made by my Son John the sixteenth day of April one thousand seven hundred and ninety one...shall be continued in a straight direction towards the Perkiomy Creek until it intersects the line laid down in his first Deed..

I give and devise unto my son Nathan Pawling his Heirs and assigns forever one hundred acres of land adjoining the tract I have given him by Deed, the line to begin on the River Shuykill and continue up to the Perkiomy Creek such courses as shall be found on survey most convenient for the two adjoining Farms taking into consideration the cleared and timber land on each...And if my Sons Henry and Nathan do not agree between themselves on a line to divide the hereby devised one hundred acres from my Mansion House Farm, in that case each of them shall chose one Person which two Persons so chosen shall nominate a third...shall proceed to survey a line the most suitable in their judgement which line when run and laid down I do Will shall forever after be and remain the fixed boundary forever between my son Nathan's land hereby devised and the tract of land on which my Mansion House now stands...

I give and devise unto my son Henry Pawling his Heirs and assigns forever all the remainder of my tract of land in Providence Township...it being that part on which my Mansion House stands and in which I now live, there being between Two and Three hundred Acres of land contained therein with the Buildings and improvements thereon be the same more or less, the said devised premises subject to the payment of the following sums of money which my son Henry his heirs Executors..."

Henry Pawling (I), deceased

to

Children

c. 1739

Philadelphia Administration Deed No. 100/ Will No. 5

(Henry Pawling (I) died intestate leaving six children; Henry Pawling (II) was given ownership of the property)

Edward Farmer

to

Henry Pawling (I)

September 15, 1719

500 A.

(not cited)

* For the purpose of this study, the chain of title incorporates both deed descriptions of property transfers and will inventories which make references to the management of "Walnut Hill" farm (ie: sales of farm land and equipment between adjacent farmsteads, references to crops, and records of repairs...). This puts the different periods of ownership (Pawling and Wetherill eras) into a more comprehensive context, hopefully presenting an image of the large-scale of this farming complex as it transformed into a "gentleman farmer's estate".

(Ann F. Rhoads, Douglas Ryan, and Ella Alderman, "Land Use Study of Valley Forge National Historical Park," Final Report, Morris Arboretum of the University of Pennsylvania, Philadelphia, PA, October 1989, 128; "Documentation of Historic Structures at 'Fatlands Farm' and 'Walnut Hill'" (Parcels 101-68 and 101-61 of Valley Forge National Historical Park), August 1985, 70-72; Department of Records, Deeds and Wills, Philadelphia and Montgomery County.)

Appendix C:
"Wetherill Farm Account Books, 1861-1880"*

Farm Account Book No. 1

"Walnut Hill" March 7, 1861

April 3-8 bushels oats (pr. Gardener)

June 4-1 bushel corn

June 23-17 bushels oats (pr. Coachman)

Aug. 29-172 bushels corn

Oct. 2- E. Royal--To 10 lambs @ \$4.00

Oct. 5,6,7,8-5 bushels oats
54 bushels corn

Oct. 9,10,11,12-4-1/2 bushels oats
1 bushel corn

Oct. 12,15-A.F. Jarett--84 bushels corn

Oct. 17-William Logan--To 180 lb. Pork

Oct. 25-Henry Wetherill--4 bushels oats,
1 bushel apples, 2 bushels potatoes

Oct. 30-196 lb. pork

(Other items mentioned in the 1861 farm account include milk, hay, and corn)

March 19-sold 388 20/32 Bu. Oats @ \$.35-1/2
sold 341 22/32 Bu. Oats @ \$.33
\$250.70

May 22- Gershon L. Symon-- To 1 Bu. corn
David Sower-- To 3 lambs @ \$3.75 (\$11.25)

May 23- L. Landis-- To 36 Bu. Corn @ \$.58
To 5 Bu. Oats @ \$.36

May 26- A.F. Jarett-- To 67 12/56 Bu. Corn @ \$.58

May 27- To 116 lbs. Wool @ \$.37--\$42.92

Sept. 9- Sold 3 Bu. Apples @ \$.40--\$1.20

Oct. 16- William Reese-- To 73 gallons Cider @ \$.05

Oct. 18- A.F. Jarrett--
 14 Bu. Corn
 50 Bu. Corn
 16 Bu. Corn
 28 Bu. Wheat

Dec. 18- S. Benner--678 lbs. pork
 20- " 620 lbs. pork @ \$.06-1/2
 27- " 662 lbs. pork

Jan. 8- Sam Benner--520 lbs. pork

Jan. 14, 1863- Richard Mccahn--1 bull @ \$50

April 13- W.A. & S. Rogers--50-1/2 Bu. Wheat
 17- " 50-1/2 Bu. Wheat

Jan. 6, 1864- 335 lb. pork @ \$.09
 23 444-1/4 lb. pork @ \$.09-1/2

March 28- Wagner-- To 1 Cow @ \$42.00 name Longbat

April 8- Wagner-- To 1 Cow "Mary" @ \$34.00

April 14- P. Pennepacker-- To 8 lambs @ \$5.75

April 30- Wagner--To 1 Cow "Skunk" @ \$35.00

June 16- H. Walker-- To 6 lambs @ \$4.87-1/2

June 27- Wagner-- To 1 Cow "Strawberry" @ \$50.00

Farm Account Book (1862-1864)

Feb. 1862- Bot. 4 lbs. Cattle Powders @ \$.25
 2 sacks salt @ \$1.90

Mar. 5- Bot. 3-1/2 Bu. cloverseed @ \$.04-5/8
 2 bags @ \$.30

Oct. 4- Bought a Bull @ \$24.00

Dec. 3- Bot. 2 sacks salt
 10 cider barrels

Feb. 27, 1863- Cowfeed 586 lbs.

Mar. 3- 3 Bu. cloverseed
 sack salt

April 25- stall rent-- \$10.00
 To 55 Bu. wheat

Farm Account Book (1862-1864) (continued)

Sept. 23, 1863- Bot. 4 sheep @ \$3.75
/2 ton Cowfeed 3 Bu. Cloverseed
2 bags Cloverseed
1 sack salt
stall rent for one year-- \$20.00
(settled March 26, 1864)

April 1, 1864- 83 Bu. wheat

Cows Names & Value

Matt	\$20.
Turvy	40.
Broadback	35.
Lady	35.
Friday	30.
Getty	30.
Lock	35.
Hingy	30.
Lopsy	30.
Bond	28.
Fairy	35.
Buff	15.
Strawfoot	15.
Nilly	45.
Phoebe	25.
Queech	30.

Farm Account Book (1859-)

April 1859

Articles found and halved on farm
33 sheep @ \$2.45
165 Bu. Corn @ \$.80
125 Bu. Oats @ \$.50

Articles brought on farm and halved
199 Bu. Oats @ \$.50
15 Bu. Corn @ \$.80

Cattle found on farm

1 horse "John", color brown, age 5 years
 1 horse "Dick", black, age 5 years
 1 horse "Charley", bay, age 5 years, died
 1 horse "Lock", bay, age 5 years
 1 Mare "Fan", bay, age 5 years, sold

Cows

1 red cow, named	"Sore Back"
"	"Red Roan"
1 brown cow,	"Long Seat", sold
1 brindle cow,	"Dan"
"	"Little Roan"
"	"White"
1 dark brown	"Hump-Back"
1 red cow	"Dark Red"
1 bright red	"White Seat", sold
1 red	"Black Seat", sold
1 dark red	"Five Seat"
1 red	"Diny"
1 brown	"Big Mooly"
1 spotted	"Hard Milker", sold
1 brindle	"Fall down", sold
1 white durham cow, sold	
1 spotted cow, sold	
1 red, sold	
1 yellow, sold	
1 spotted, sold	
1 roan china, sold	
1 spotted china, sold	
1 red pet, sold	
1 red & white, sold	
1 red, sold	
1 red, sold	
1 all red, sold	
1 black & white, sold	

Heifers

1 heifer named	"Blackface"
1 heifer	"Curley", died March 12, 1863
1 heifer	"Cherry", sold
1 heifer	"Long Teal"
1 white & black heifer	"Whiteback"
1 bull	

Poultry found on farm

25 chickens
 1 turkey

Poultry brought on farm

75 chickens, 4 turkeys, 1 Gob

Farm Account Book (1859-) (continued)

April 1859-- Brought 6 cows on farm,
1 died, 1 sold

3 of Mr. Wetherill's cows died,
12 sold (2 were heifers), bull sold

April 1859- Raising a bull "Valdimir", sold

Feb. 1860- Raising a heifer "Capitola"

Feb. 1861- Raising a heifer "Whiteface"
" " "Bloss", died Dec. 15, 1862
" " "Bridget"
" " "Stripe"
" " "Nance"

Oct. 8, 1862- Cow died (red & white)

Dec. 15, 1862- heifer died (red & white) "Bloss"

Mar 12, 1863- cow died "Curley"

Jan. 27- Bot. of David Matheys
50 posts @ \$.12-1/2

Sold for J.P. Wetherill
125 lbs. old cart irons @ \$.01-1/2

May 29, 1862- Bot. for Mr. Wetherill

1 red cow imported stock \$30.00

1 Roan cow imported stock \$30.00

June 25- Sold for J.P.W.
1 red cow "Sore Back" \$15.00

Jarett's(?) Estimate for repairing Old Barn
July 8th, 1862

5000 shingles	15.50	77.50
400 lath	.62	2.50
200 Hemlock	1.30	2.60
200 bands	1.80	3.60
100 nails		<u>3.50</u>
		89.70
Carpenter Work		<u>30.00</u>
		\$119.70

Farm Account Book (1859-) (continued)

April 1, 1863 " I have today sold my one half of the cows belonging to me to Thos. Logan for 350\$. I have 27 and he 4 so that of the entire herd say 31 cows he owns one half and I one half"

J. P. Wetherill
Thos. Logan

April 1, 1865

We have on hand

Milkers	26
Dry	4
2 yr. olds	<u>6</u>
	36
Bot. in 1865	<u>1</u>
	37

April 1, 1866

Cows--

Milkers	26
1 bull	<u>1</u>
<u>Old Barn</u>	27

Dry	7
3-yr. olds	2
2-yr. olds	4
2-yr. old bull	1
yearling	<u>6</u>
<u>Mall</u>	20

47 head

Sheep	<u>38</u>
-------	-----------

Cows on hand April 1, 1867-- 51 head
(37 cows, 3 bulls, 11 heifers)

April 1, 1868-- 61 head

Calves Raising-- 1 bull, 14 heifers

Farm Account Book (1859-) (continued)April 1, 1869-- 61 head cattle

<u>Cows</u>	<u>Bulls</u>	<u>Heifers</u>
37	3	21
(2 died)	<u>(1 butchered)</u>	
<u>(6 sold)</u>		
29	2	21
<u>(bot. 3)</u>		
32		
came in		
profit		
<u>6</u>		<u>6</u>
38	2	
cows	bulls	heifers

April 1, 1870-- Cattle on hand
 35 cows
 10 heifers
 2 bulls
1 calf raising
48 head

April 1, 1871-- 42 cows
 2 bulls
7 heifers
51 head

April 1, 1872-- 37 cows
 2 bulls
16 heifers
55 head

April 1, 1873-- 41 cows
 2 bulls
9 heifers
52 head

April 1, 1874-- 39 cows
 3 bulls
2 heifers
44 head

1875-- 36 cows
2 bulls
38 head

Farm Account Book (1859-) (continued)

1876-- 36 cows
 3 bulls
 2 heifers
 41 head

1877-- 32 cows
 2 bulls
 3 heifers
 37 head

1878-- 36 cows
 4 bulls
 1 heifer
 41 head

Sheep on hand, April 1, 1878-- 48 head

Farm Account Book No. 3

"Produce of Mr. J.P. Wetherill's Farm
 Sold by Thomas Logan"

May 15, 1861

90 lb. butter
 2 "
 3 "
 20 "
 1 lamb
 1 lamb

May 22

47 lb. butter
 30 "
 3 "
 3 doz. eggs
 1 lamb
 1 veal

May 25

30 lb. butter
 36 "
 2 "
 10 "
 1 lamb

May 30-- 108 $\frac{7}{56}$ bushels Corn

June 13-- 101 bu. Oats

Farm Account Book No. 3 (continued)June 17-- 22 lambsJune 20--124 gallons vinegarJune 18-- 1 bu. Corn

(Other produce sold or referenced: corn, milk, apples, potatoes, butter, veal, lamb, and eggs)

Farm Account Book No. 4Wheat taken to Mill for flour

April 11, 1878	5 bu.
May 13	5
June 4	5
June 26	5
July 30	3 (last of last yr's. crop)
Aug. 8	5 (1st of New)
Aug. 23	5
Sept. 17	5
Oct. 8	5
Oct. 28	5
Nov. 16	5
Dec. 12	5
1879 Jan. 2	5
Jan. 22	5
Feb. 5	<u>5</u>
	<u>73 bu.</u>

The wheat crop harvested 1877 produced 487 1/2 bu. exclusive of what was sowed, 50 bu.--entire crop 837 1/2 bus.

Cob-corn weighed

	<u>Wetherill</u>	<u>Janeway</u>	<u>Logan</u>	
March 8	10495	10566	2447	lbs.
13		1800	4670	

Makes 313 47/79 bu. shelved

Farm Account Book No. 4 (continued)

Wheat crop 1878

Field back of barn produced

Beardless put in Barn 6610 Sheaves

Beardless put in Grain House 1360 Sheaves

Spring Field produced

Bearded put in barn 6330

Total 14300Rye-- 160 sheavesOat Crop (1878)-- 12870 sheavesFarm Account Book No. 5

The corn crop of 1880 reached 1505 bu. (shelled) of good exclusive of nubbins [on island field & Copperfield]

Farm Account Book No. 6

Statement of Assessment of the Estate of Wm. Wetherill dec. as given by Jno. W. Barry, assessor of Lower Providence (April 24, 1880)

Homestead	42 A. valued at	\$16200.
Locustwood	2 A. valued at	5400.
Farm	302 A. "	31500.
Pawling bridge farm	221 A. "	25200.
Tenant house	1 A.	630.
Mill	1 A.	3150.
Wheelwright & Smith Shops	2 A.	2250.

April 1, 1879 Thomas Logan moved to Fatland Farm

15 cows valued @ \$35.00

1 bull " 15.00

1 heifer " 12.00

9 pigs " 5.00

Profits paid Mr. W.

1st year \$721.08

2nd year \$1142.30

Farm Account Book No. 6 (continued)March 7, 1883

Joint cattle on Meadow Grove Farm were divided to-day as follows:

Chosen by Mr. Wetherill:

Shovehorn	1
Whitehead	2
Mattson	3
Bony	4
Tex	5
Little Brindle	6
White Tail	7
Garfield	8
Sicklehorn	9
Cherry	10
Jno. Roberts	11
Old Spot	12
Alderny	13
Yellow heifer	14

Logan's Cattle:

Yellow cow & calf	1
White " "	2
Lineback	3
Maud	4
Broadhorn	5
Milt Davis	6
Big White	7
Crumple Horn White	8
Red	9
Turtlesell	10
Daisy	11
Three Teat Brindle	12
Grey (Jno. Roberts)	13
White heifer	14

Odd cattle to be sold & proceeds to be divided

are as follows: Bull

Cow & calf

Buffalo heifer

April 1, 1879 Furnished by Logan:

27 ewes @ 6.50
 (including 27 lambs) \$175.50
 1 bull 15.00
 1 heifer 12.00

349 bu. corn @ 53 184.97

248 bu. oats @ 32

20 bu. Screenings

April 4, 1879

Paid for 983 lbs. Bran

April 9 butter
 eggs

April 12 Paid for 1027 lbs. Bran

19 " " 3042 lbs. Bran

April 30 Paid for 1 bu. Cloverseed

Farm Account Book No. 6 (continued)July 2, 1879 Furnished by Logan:

11 bu. seed potatoes

26 bu. Rye

July 14, 1879 Paid for sow & pigs (7)Sept. 18, 1879 Paid for 25 bu. seed wheat

Paid for 19 bu. seed wheat

(Other references made to lamb, curd, buttermilk, butter, eggs)

Sept. 16, 1881- Seeded Island field containing 19 1/8 A. with 31 5/8 bu. wheat and 3 bu. & 1 qt. Timothy.Sept. 22, 1881- Seeded 8 A. of Copperfield with wheat & Timothy.March 31, 1882

Stock, Grain & c. on hand

Valued as follows ["Fatland Farm"]:

34 Cows	@ \$35	1190.00
1 Cow		10.00
2 Bulls		70.00
7 Heifers	@ 5	35.00
36 Sheep	@ 6.50	234.00
20 Shoats	@ 4	80.00
20 Bus. Wheat	@ 1.33	26.60
471 12/70 Bus. Corn	@ 73	343.95
496 " Oats	@ 50	248.00
22 1/2 " Rye	@ 60	13.50
Screenings 16 Bu.	@ 30	4.80
Seed Potatoes 24 Bu.	@ 60	14.40
		<u>\$2270.25</u>

Farm Account Book No. 6 (continued)

"Meadow Grove"

25 Cows

1 Cow

2 Bulls

5 Heifer

36 Sheep

14 Shoats

20 Bu. Wheat

353 26/70 Bu. Corn

372 Bu. Oats

16 49/56 Bu. Rye

18 Bu. Seed potatoes

* This appendix only has excerpts of the account books for the purpose of this study; for a more complete record, the original Farm Account Books should be referenced. "Wetherill Farm Account Books, 1861-1880," (C-4, Accession #11.530), Montgomery County Historical Society, Norristown, PA.

Appendix D: Classification of Pennsylvania Barn Types

SUMMARY OF PENNSYLVANIA BARN TYPES LANCASTER · CHESTER · MONTGOMERY · BERKS · BUCKS · LEHIGH · NORTHAMPTON ·



TYPE A. Barn or "barnhouse" type. Cantilevered porch projects over stable wall. Three or three sides. Good for hay on fourth side. Main slope continuous over porch. Hay mow usually three or more bays in length. Stables at lower level entered from front. Width of barn generally two or three bays. Cantilever supported on masonry wall. Type common in Lancaster County and Berks.

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The American Institute
of Architects Archives.

TYPE B. Type in general is similar to type A. Major difference being that the width of the stable wall includes the cantilever on stable side from front. This type of barn found on almost level ground. Some of additional stable entrance is in the gable end. The various kinds of wall ventilators are common on all types. Type is common to all counties.

TYPE C. The all-stone, one level barn. Both hay and level ground. Occasionally a porch, but a stone wall continuous behind projection. Length three or five bays, width three or four bays. Stables are entered from lower level. Hay mow at front or at gable end. Sometimes stables are on island with aisles around them, or similar to type A. Hay mow over stable doors. Timber construction similar to type A and B. Found in Chester, Lehigh, Montgomery, Berks and Northampton Counties.

For information see: THE ARCHIVES
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Washington, D.C. 20004

TYPE D. All stone barn. Two levels. Differs from type C in use of covered passage in front of stable doors. Walls supported by piers and by arches. Found in Montgomery and Lehigh Counties.

TYPE E. Generally known as "double doors". The throwing floor raised a story above the hay mow on either side. Primary under throwing floor and on level with hay mow. Because of added level, the barns are higher than average. Also have hay bridge and entrance on driveway from beneath hay bridge. Use of continuous beam over stable doors is common. Timber construction is usually similar to other types. Length three bays width three bays. Found in Chester and Berks Counties.

TYPE F. The level barn. Stables on right and left of throwing floor. The level of which is about a foot below grade. While throwing floor is raised a foot or two above grade. Hay mow at both long sides prevent driving through barn. Hay mow over stable walls. All stone walls. Beam over stable doors. Construction common to all counties.

RC 80!
ER 7.1
Box 116, CHESTER COUNTY

SUMMARY OF PENNSYLVANIA BARN TYPE

LANCASTER · CHESTER · MONTGOMERY · BERKS · BUCKS · LEHIGH · NORTHAMPTON



TYPE G. "Traditional Barn". This type midway between types F and G. All same barn. Stables at two levels and threshing floor intermediate. Hay-mow over stables. Construction as Lehigh, three bays; width, three bays. Type rare. Berks County.



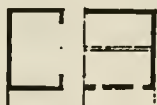
TYPE H. This type only a variation on type I. Large wooden framework and supported on stone piers or wood posts. Common to Chester County. Also found in smaller extent in other Counties.



TYPE I. Primitive low level log barn. Could be compared to type G. This type is almost identical. Simple gambrel roof. The logs are exposed and are stained and filled with lime mortar. Found in Berks County.



TYPE J. Two units and runway. One roof. Logs covered with vertical boards. No mortar present. All one level. Compare similarly to type F. Primitive form but had elements of later construction. Found in Lehigh County.



TYPE K. Powerhouse of "Swiss". Upper level is similar to type J. Logs covered with siding. Power bay independent of log unit but supported by cantilever beam. General form identical with type J. Found in Lehigh County.

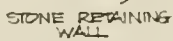
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BOX 11 L, CHESTER COUNTY

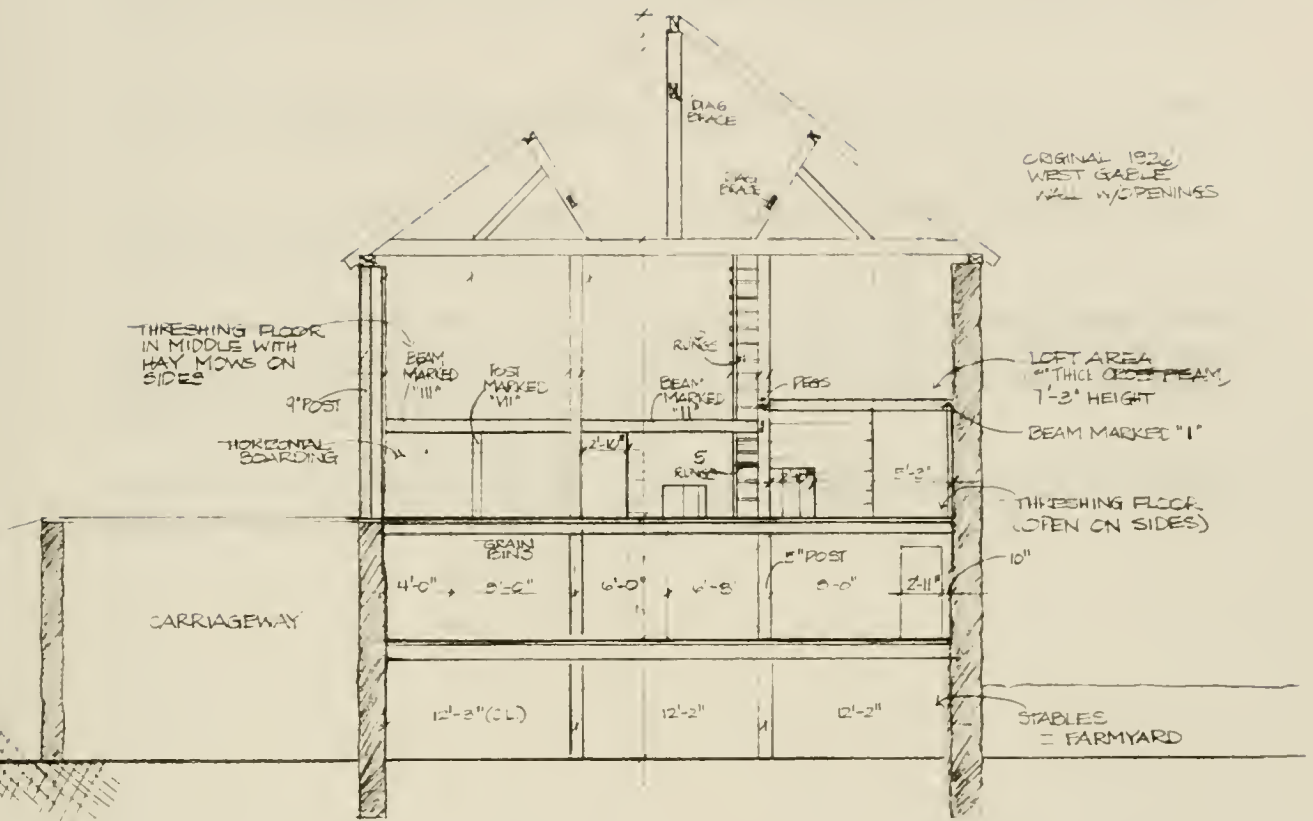
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WASHINGTON, D.C. 20036

Charles H. Dornbusch

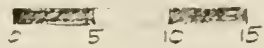
Taken from Charles H. Dornbusch, "Summary of Pennsylvania Barn Types,"
American Institute of Architects, Dornbusch Collection, Record Group 801, SR
7.1, Box 11 L, Chester County, A.I.A. Archives, Washington, D.C.



NOTES:
3'-8" WINDOW HEIGHT
8'-7" FLOOR TO BOTTOM OF SILL
6'-2" DOOR HEIGHT



1345 CROSS SECTION
(VIEW EAST)



¹ The Walnut Hill parcel was originally part of a 500-acre parcel owned by the Pawling family, until Samuel Wetherill, Jr. purchased portions of the land starting in 1813. The 157-acre parcel that became known as “Walnut Hill” was later divided up into a smaller 57-acre parcel. This was the result of the construction of a filtration plant along the Schuylkill River and the introduction of Pawling’s Road to the north. This will be discussed in detail in Chapter II.

² E. Gordon Alderfer, The Montgomery County Story (Norristown, PA: Commissioners of Montgomery County, 1951), 212.

³ Montgomery County was originally part of Philadelphia County, and was well-known early on as a prosperous farming region.

⁴ The prevalent “Pennsylvania bank barn” is primarily derived from two European sources—Swiss and German derivations. These origins are addressed in Chapter III in an attempt to establish the characteristics of the common Pennsylvania bank barn, and determine how the Walnut Hill barn is distinctive from this type.

⁵ Stevenson W. Fletcher, Pennsylvania Agriculture and Country Life, 1640-1840, Volume I (Harrisburg, PA: Pennsylvania Historical Museum Commission), 142.

¹ E. Gordon Alderfer, The Montgomery County Story (Norristown, PA: Commissioners of Montgomery County, 1951), 83.

² Alderfer, 212.

³ Theodore W. Bean, History of Montgomery County, Pennsylvania (Philadelphia: Everts and Peck, 1884), 1-2.

⁴ Alderfer, 30.

⁵ Alderfer, 49.

⁶ Alderfer, 23-24.

⁷ Alderfer, 34.

⁸ The agreement for purchasing this large tract of land was not guaranteed in writing and caused some disagreements when the Welsh settlers arrived in Pennsylvania. Alderfer, 34.

⁹ Alderfer, 40.

¹⁰ Alderfer, 41.

¹¹ Alderfer, 24, 34.

¹² Alderfer, 67.

¹³ Eric Sloane, Our Vanishing Landscape (New York: Ballantine Books, 1974), 7.

¹⁴ Yield per acre was low, about 5 to 12 bushels per acre. Few farmers took the initiative to buy improved seeds, develop new rotation schemes, or fertilize grain fields in an effort to increase yield. It was not until the late eighteenth to early nineteenth century (1795-1820) that a revolution in farming altered the agricultural practices and moved the region into a more specialized direction. James T. Lemon, The Best Poor Man's Country: A Geographical Study of Early Southeastern Pennsylvania (Baltimore, MD: The Johns Hopkins University Press, 1972), 156.

¹⁵ On an average farm (125 acres, after 1760), typically 10 acres was designated to winter grain with 2 acres set aside for rye. Lemon, 156.

¹⁶ The amount of acreage set aside for oats was typically 4-5 acres, producing yields of 10-15 bushels per acre. Barley was not a popular crop and buckwheat was only grown in small amounts (c. mid-18th C.). Lemon, 156.

¹⁷ Apple orchards were grown at “Walnut Hill” and a remnant of the stone cider press was found along the bank of the barn’s older (1826) section, which is discussed in Chapter IV. In James T. Lemon’s book, he cites yields of 4-10 bushels per tree, with 2 to 3 trees providing enough apples for one barrel of cider. He also mentions that hogs consumed a large amount of rotten apples and peaches. Lemon, 158.

¹⁸ Lemon, 158.

¹⁹ Lemon, 163-167.

²⁰ Milk production per cow increased from about 1,000 quarts in 1800 to 1,500 quarts in 1840. Stevenson W. Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” Pennsylvania History (Volume 14, Number 3, July 1947), 193.

²¹ Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” 192.

²² Crude plows, scythes and sickles were still used as late as 1830. Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” 193.

²³ Although the farmers of southeastern Pennsylvania had a reputation of exploiting the land, the area was still better cultivated than the majority of the United States farming regions. Lemon, 150.

²⁴ Fletcher describes the attitudes of farmers towards this experimental farming promoted by gentlemen farmers: “‘Dirty farmers’ were inclined to scoff at ‘scientific farming’ as impractical; ‘they talk politics and publish nonsense’”. Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” 189. Lemon, 150.

²⁵ Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” 191-2. Lemon, 171.

²⁶ The improved rotation schemes were not popular among better farmers as well and it was not until after the 1780’s that new farming technology excels. Gentlemen farmers, generally dissatisfied with the great emphasis on grains sought other crops. In 1784, J.B. Bordley advocated the use of root crops (ie: turnips, potatoes, peas, and beans) as part of the rotation scheme. Lemon, 159.

²⁷ Lemon, 174.

²⁸ Lemon, 176; Fletcher, “The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840,” 191.

²⁹ Fletcher states that there was a twenty-five year period, between 1795 and 1820, that marked the turning point in Pennsylvania agriculture. According to Fletcher, "America then cut loose from the mother country agriculturally as well as politically. After 1790, slavish copying of English methods of farming largely ceased and we began to develop a program of our own". Fletcher, "The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840," 189.

³⁰ Fletcher, "The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840," 195.

¹ During the Revolutionary War, this area played a prominent role due to its proximity to the troops stationed at Valley Forge.

² Condensed Soil Survey, Montgomery County, Pennsylvania. United States Department of Agriculture, Reprinted by Montgomery County Conservation District, June 1986; Ann Rhoads, Douglas Ryan, Ella Alderman, "Land Use Study of Valley Forge National Historical Park," Final Report (Philadelphia, PA: Morris Arboretum of the University of Pennsylvania, October 1989), 126.

³ Later this riverfront property was purchased by the state and used to construct an impounding basin, thus greatly altering the pastoral landscape.

⁴ Refer to Appendix A for soil types. Condensed Soil Survey, Montgomery County, Pennsylvania.

⁵ Rhoads, 126.

⁶ Originally purchased by Samuel Wetherill, Jr. in 1813 when the site was mined for a number of years and, later, became the home of James Audubon. E. Gordon Alderfer, The Montgomery County Story (Norristown, PA: Commissioners of Montgomery County, 1951), 88.

⁷ Alderfer, 176.

⁸ James E. Kurtz, "Archaeological Survey and Assessment: North of the Schuylkill River," Volume I: Survey Findings and Recommendations, Draft, U.S. Department of the Interior, National Park Service, Mid-Atlantic Region. Philadelphia, PA (unpublished), 1988, 20.

⁹ "Some Account of the Pawling Family of New York and Pennsylvania," Publications of the Genealogical Society of Pennsylvania (Philadelphia, PA: Genealogical Society of Pennsylvania, Volume VII, 1920), 7.

¹⁰ John B. Dodd, "Classified Structure Field Inventory Report: Meadow Grove Spring House," National Park Service, Mid-Atlantic Region, prepared for Valley Forge National Historical Park, n.p., n.d.; H.W. Kriebel, "Genealogical Studies of Some Providence Families and their Connections," Montgomery County Historical Society, Norristown, PA, 1934.

¹¹ Alderfer, 146.

¹² Moses Auge, Lives of the Eminent Dead and Biographical Notices of Prominent Living Citizens of Montgomery County, PA (Norristown, PA: Published by the author, 1879), 252.

¹³ Philadelphia Administration Deed Book No. 100, Will 5, 1739, Philadelphia City Hall, Philadelphia, PA.

¹⁴ Rhoads, 124.

¹⁵ Montgomery County Register of Will No. 4976, "Inventory of the Goods," Book 1, Henry Pawling (II), November 18, 1791, Department of Records, Norristown, PA, 310.

¹⁶ Kurtz, 21.

¹⁷ Mark Frazier Lloyd, "Documentation of Historic Structures at 'Fatlands Farm' and 'Walnut Hill'," Report prepared for Valley Forge National Historical Park, Valley Forge, PA (unpublished), 1985, 44; Montgomery County Deed Book 6.39, 1785, Montgomery County Department of Records, Norristown, PA.

¹⁸ Montgomery County Register of Will No. 4976, Henry Pawling (II), November 18, 1791, Department of Records, Norristown, PA, 349.

¹⁹ Montgomery County Deed Books No. 6-39 and 8-40; Montgomery County Register of Wills #4976, November 18, 1791, Historical Society of Montgomery County, Norristown, PA.

²⁰ Lloyd, 47; Assessor's Ledgers of 1793 and 1803, Pennsylvania State Tax Returns; U.S. Direct Tax of 1798, "Schedule A", p. 108, and "Schedule B", p. 292, Providence Township, Montgomery County, Pennsylvania.

²¹ Rhoads, 126; advertisement in the Norristown Gazette, 13 December 1799, Vol. I, No. 27.

²² Montgomery County Register of Wills No. 4978, Henry Pawling (III), Department of Records, Norristown, PA.

²³ Montgomery County Register of Wills No. 4978, Henry Pawling (III), Department of Records, Norristown, PA.

²⁴ Edgar Fahs Smith, Charles Mayer Wetherill, 1825-1871 (reprinted from the Journal of Chemical Education, 1929), "Wetherill-Pamphlets," Chester County Historical Society, West Chester, PA.

²⁵ At the time of the Revolution, Samuel Wetherill actively supported the cause by supplying Washington's troops encamped at Valley Forge with clothing. He was also a prominent member of the Society of Friends. Smith, 1.

²⁶ "The Wetherill Papers, 1762-1899" Industrial Research Department, Wharton School of Finance and Commerce, University of Pennsylvania, Catalogued April 1942 by Miriam Hussey, v.; Samuel P. Wetherill (New York: James T. White & Co., MCMXXVIII), "Wetherill-Miscellaneous" File, Chester County Historical Society, West Chester, PA.

²⁷ Montgomery County Deed Book No. 28:645, February 5, 1813; Frederick Beates, “scrivener”, of Philadelphia, to Samuel Wetherill, Jr., “Druggist”, of Philadelphia, for \$7,000 plus an unspecified mortgage.

²⁸ Dodd, Worksheet 1D; “How Stephen Girard Invested \$500 in a Perkiomen Lead Mine,” Scrapbook A-8-15, p.141, Montgomery County Historical Society, Norristown, PA.

²⁹ F. Harold Evans, Historical Sketches of Copper and Lead Mining in Montgomery County, Pennsylvania (Special Publication no. 2, Friends of Mineralogy, Pennsylvania Chapter, Inc., 1980, 260.

³⁰ Evans, 223.

³¹ Montgomery County Deed Book No. 41:349 , November 8, 1825, Montgomery County, PA.

³² Montgomery County Deed Book 41:587, April 1, 1826, Montgomery County, PA.

³³ Philadelphia Register of Wills, No. 36:65-102, 1844, Philadelphia Department of Records, Philadelphia, PA.

³⁴ John Shearer and John R. Umstead, administrators of William Pawling’s estate, and Rebecca Pawling, his widow, sold 99 acres and house to John Price Wetherill at a public sale held October 25, 1844. This parcel eventually went to Rachel Wetherill; Deed Book No. 66:178, April 9, 1845, “Wetherill Properties” File, Historical Society of Montgomery County, Norristown, PA.

³⁵ Deed Book No. 65:10.

³⁶ Inventory of the Effects of Wm. Pawling Dec’d., Filed August 7, 1843, #691, “Wetherill Properties” File, Historical Society of Montgomery County, Norristown, PA.

³⁷ “Copy of Vendue Book,” Estate of William Pawling, deceased, Filed October 18, 1845, “Wetherill Properties” File, Historical Society of Montgomery County, Norristown, PA.

³⁸ John Price Wetherill was a true scientific manufacturer, serving as the organizer and vice-president of the Philadelphia Academy of Natural Sciences. Smith, 2.

³⁹ Philadelphia Society for Promoting Agriculture., Sketch of the History of the Philadelphia Society for Promoting Agriculture, 1939, Appendix: Listing of “Honorary and Resident Members, 1785-1935”.

⁴⁰ John Price Wetherill bequeathed his household goods, furniture and personal property to his wife, and devised his store on Front Street, Philadelphia, to his son John P., Jr. Philadelphia Register of Wills #214, 185, Philadelphia City Hall, Philadelphia, PA.

⁴¹ His will only mentions “Stock in farm in Montgomery County--\$4,317.58”.

⁴² Philadelphia Register of Wills #680, 1877, Philadelphia City Hall, Philadelphia, PA.

⁴³ Maria W. Janeway supposedly acquired the Pawling mansion in 1845, however, it was not granted to her until 1878, twenty-five years after her father's, John Price Wetherill, death. The granting of ownership involved a lengthy controversy before the matter was settled. The Court of Common Pleas partition case involved the distribution of two tracts: "1) No. 13, Schedule A. Messuage and tract in Lower Providence Twp., containing 157 A. and 81 P., 2) No. 14, Schedule A. Messuage and tract in Lower Providence Twp., containing 99 A. 24 P., as described in D.B. 66, p.178". No. 13 is the estate of Samuel Wetherill, Jr. which was passed down to his son John Price Wetherill and recorded in Deed Book No. 180: 466. Court of Common Pleas, No. 1, #500, Partition Docket 3, 203, Philadelphia County, PA, December Term, 1877, No. 500, "Wetherill v. Wetherill", Office of Prothonotary, City Hall; Montgomery County Deed Book 2034.559, p. 560; Deed Book 2034, 559, "Wetherill Properties" File, Historical Society of Montgomery County, Norristown, PA.

⁴⁴ Maria W. Janeway and her husband, Reverend John L. Janeway, raised their six children at Walnut Hill--Jacob G., Price W., Elizabeth, John L. Jr., Maria K., and Rachel W.; "Wetherill Properties" File, Historical Society of Montgomery County, Norristown, PA.

⁴⁵ Montgomery County Register of Wills No. 3278, Maria L. Janeway, September 30, 1890, Norristown, PA.

⁴⁶ Montgomery County Register of Wills No. 3278, Maria L. Janeway, September 30, 1890, "Estate of Maria L. Janeway, dec'd.," Inventory and Appraisement, filed October 30, 1890, Department of Records, Norristown, PA.

⁴⁷ Lloyd, 54.

⁴⁸ For more information on the mansion at Walnut Hill, refer to Mark Frazier Lloyd's "Documentation of Historic Structures at 'Fatlands Farm' and 'Walnut Hill'."

⁴⁹ Franklin Survey Atlas, 1935, "Wetherill Properties" File, Historical Society of Montgomery County, Norristown, PA.

⁵⁰ Montgomery County Will Book No. 97:39, April 5, 1948, Price W. Janeway, Jr. (died Feb. 28, 1949), File #25830, "Wetherill Properties" File, Montgomery County Historical Society, Norristown, PA.

⁵¹ Montgomery County Will Book No. 97:39, April 5, 1948, Price W. Janeway, Jr. (died Feb. 28, 1949), File #25830, "Wetherill Properties" File, Montgomery County Historical Society, Norristown, PA.

⁵² Pennsylvania Gazette, February 28, 1771, "Wetherill Properties" File, Historical Society of Montgomery County, Norristown, PA.

⁵³ William Bakewell was recognized by the Philadelphia Society for Promoting Agriculture for employing the latest in plow designs: "...three furrow plow consisting of three shares and the mould plates of iron fixed in a frame, so as to follow each other at nine inches distance, by which means twenty-seven inches of land are ploughed at a time. It is drawn by three horses abreast and has two wheels to regulate the depth." Bakewell was also known for being the first farmer to employ a threshing machine in place of the crude, time-consuming hand flailing technique. Stevenson Whitcomb Fletcher, Pennsylvania Agriculture and Country Life, 1640-1840, Volume I (Harrisburg, PA: Pennsylvania Historical Museum Commission), 94; Philadelphia Society for Promoting Agriculture, Memoirs, I, 1808, 25; Alderfer, 84.

⁵⁴ Advertisement for Sale of "Fatland" Farm, "The Subscriber Offers for Sale the Following Valuable Property," (newspaper not referenced), August 17, 1813, "Wetherill File", Historical Society of Montgomery County, Norristown, PA.

⁵⁵ Norristown Register and Democrat, October 16, 1844, "Valuable Real Estate at Public Auction," "Wetherill File", Historical Society of Montgomery County, Norristown, PA.

⁵⁶ The annual production of an 100-acre farm in Montgomery County would yield the following (c. 1865): 250 bu. wheat, 400 bu. oats, 500 bu. corn, 300 bu. potatoes, 2400 lbs. butter, and miscellaneous other items such as pork, lambs, veal, wool, hay, poultry, orchard fruits, and dairy products; Theodore Bean, A History of Montgomery County, Pennsylvania (Philadelphia: Everts & Peck, 1884), 444.

⁵⁷ It lists 25 chickens and 1 turkey found on the farm; 75 chickens, 4 turkeys, and 1 Gob brought onto the farm; "Wetherill Farm Account Books, 1861-1883," Account Book No. 2, (April 1859), Montgomery County Historical Society, Norristown, PA.

⁵⁸ Cows sold in 1864 were carefully recorded by name: "March 28--Wagner--To 1 Cow @ \$42.00 name Longbat"; other cows sold to Wagner were Mary, Shunk, and Strawberry. Names mentioned in this book include J. Shunk, Henry Wetherill, A. Snyder, Mrs. McCaffery, L. Landis, and Benjamin Caselberry. "Wetherill Farm Account Books, 1861-1883," Account Book No. 1 (1861-1864), Montgomery County Historical Society, Norristown, PA.

⁵⁹ Cloverseed purchased during the years 1862-63 included 3 1/2 bushels @ 4 5/8 on March 5th, 1862 and another 3 bushels the following year (March 3rd). "Wetherill Farm Account Books, 1861-1883," Account Book No. 2, (1862-1864), Montgomery County Historical Society, Norristown, PA.

⁶⁰ "Wetherill Farm Account Books, 1861-1883," Account Book No. 4 (1878-9), Montgomery County Historical Society, Norristown, PA.

⁶¹ "Wetherill Farm Account Books, 1861-1883," Account Book (1859-1878), Montgomery County Historical Society, Norristown, PA.

⁶² Matt (\$20), Turvy (\$40), Broadback (\$35), Lady (\$35), Friday (\$30), Getty (\$30), Lock (\$35), Hingy (\$30), Lopsy (\$30), Bond (\$28), Fairy (\$35), Buff (\$15), Strawfoot (\$15), Nilly (\$45), Phoebe (\$25), Queech (\$30). "Wetherill Farm Account Books, 1861-1883," Account Book (1862-1864), Montgomery County Historical Society, Norristown, PA.

⁶³ “Wetherill Farm Account Books, 1861-1883,” Account Book (1859-1878), Montgomery County Historical Society, Norristown, PA.

⁶⁴ “Wetherill Farm Account Books, 1861-1883,” Account Book (1859-1878), Montgomery County Historical Society, Norristown, PA.

⁶⁵ Montgomery County Deed Book No. 2034: 559, October 24, 1949; Deed Book No. 9867, “Wetherill Properties” File, Historical Society of Montgomery County, Norristown, PA.

- ¹ R.W. Brunskill, Traditional Farm Buildings of Britain (London: Victor Gollancz Ltd., 1987), 116; Robert Ensminger, The Pennsylvania Barn, Chapter III), 59.
- ² Robert F. Ensminger, The Pennsylvania Barn, Manuscript Draft (Baltimore, MD: Johns Hopkins University Press, to be published in 1992), Chapter II, 3.
- ³ Joseph Glass, The Pennsylvania Culture Region: A View from the Barn (Ann Arbor, MI: U.M.I. Research Press, 1986), 9.
- ⁴ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 59.
- ⁵ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 3.
- ⁶ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 41.
- ⁷ The projecting "forebay" along the upper level was usually partitioned into a separate area, serving as a granary with bins for various feed grains. The forebay was generally interpreted in two ways--one type, most commonly found in the southeastern part of the State, had the stone gable ends flush with the projecting forebay, while the other type, more frequent in the western area, had the forebay cantilevered across the entire length without any support below. Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 4.
- ⁸ Taken from Robert Sutcliff, "Travels in Some Parts of North America, In the Years 1804, 1805, & 1806," notes from "6th Month, 8th, 1806" near Paoli, Chester County. Shoemaker, 16.
- ⁹ Taken from Charles B. Trego, Geography of Pennsylvania (Philadelphia, 1843), 112; Fletcher, Pennsylvania Agriculture and Country Life, 1640-1840, Volume I, 83.
- ¹⁰ Shoemaker, ed., 18.
- ¹¹ "The widely held and long-accepted scholarly view was that the Germanic immigrants had brought ideas about components of the barn from their homelands but that the barn itself was actually developed in Pennsylvania." Learned, "The German Barn in America," University Lectures, Free Public Lecture Course, University of Pennsylvania, 1913-1914 (Philadelphia, PA: Published by the University, 1915), 338.
- ¹² Glass, 9; Ensminger, "A Search for the Origin of the Pennsylvania Barn," Pennsylvania Folklife (Volume 30, Winter 1980-1981): 50-70.
- ¹³ Witold Rybczynski, The Most Beautiful House in the World (New York: Penguin Books, 1989), 112-113.
- ¹⁴ R.W. Brunskill, Traditional Farm Buildings of Britain (London: Victor Gollancz Ltd., 1987), 117.

¹⁶ “It is tempting to press an English origin for the Pennsylvania barn since...there were strong family connections and strong trade links between Cumbria and North America throughout the late seventeenth and eighteenth centuries, including links between Penn himself and the Fells of Swarthmoor right in the heart of bank barn country.” Brunskill, Traditional Farm Buildings of Britain, 117.

¹⁶ Learned, 347.

¹⁷ Learned, 343-4.

¹⁸ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 4.

¹⁹ Brunskill, Traditional Farm Buildings of Britain, 116.

²⁰ Another type of combination farm building found in England which utilized the sloping topography was a barn used for hay storage. It too had a ramped entrance to the upper level, but had storage bays off to the sides that dropped down to the lower level (See Illustration). These ‘sink-mows’ flanked the cow-house and incorporated hatches to throw hay down to the cattle. This type related, in principle, to the “self-feeding barns” that were popular in the U.S. during the nineteenth century. The hay mows at “Walnut Hill” are dropped down to a lower mid-level, and illustrate the ‘sink-mow’ characteristic of this barn type. R.W. Brunskill, Vernacular Architecture of the Lake Counties (London: Faber and Faber Limited, 1974), 86; Brunskill, Traditional Farm Buildings of Britain, 116.

²¹ Brunskill, Traditional Farm Buildings of Britain, 115.

²² The exception, the “variant” bank barn, oriented the building across the contours with the entrance through the gable end at the lower level of the barn; R.W. Brunskill, Vernacular Architecture of the Lake Counties, 84.

²³ Brunskill, Traditional Farm Buildings of Britain, 116.

²⁴ When the grain was threshed, either by treading or flailing using horse-power, the grain was separated from the chaff. This was accomplished by throwing it in the air and the “winnowing” door provided a sufficient draft.

²⁵ Brunskill, Vernacular Architecture of the Lake Counties , 84.

²⁶ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II.

²⁷ The “double-decker” as a building type is evident in Germany in the form of a house-barn. Many of the traditionally English (Chester County) barns included add-on forebays, which represented a merging of Swiss traditions. European traditions were combined, and the barn type slowly evolved into a uniquely Pennsylvania style. Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter III, 30; phone conversation with the Robert Ensminger, March 12, 1991.

²⁸ Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 78.

²⁹ Lemon, 177.

³⁰ The organization, Philadelphia Society for Promoting Agriculture (P.S.P.A.), was initiated in 1785 as the first agricultural society in America with a lasting reputation. It stood as a representation of this new era in agricultural improvement and its members were primarily bankers, statesmen, doctors and wealthy merchants who often doubled as "gentlemen farmers". Fletcher, "The Subsistence Farming Period in Pennsylvania Agriculture, 1640-1840," 189.

³¹ John Beale Bordely, Essays and Notes on Husbandry and Rural Affairs (Philadelphia, PA: n.p., 1799), 134.

³² Taken from S.W. Johnson's Rural Economy, 1803; Alfred Shoemaker, ed., 19.

³³ Nicholson, 14.

³⁴ Nicholson, 15.

³⁵ Thomas C. Hubka, Big House, Little House, Back House, Barn (Hanover, N.H.: University Press of New England, 1984), 182.

³⁶ Taken from New England Farmer (June 14, 1823), 361; Hubka, 182.

³⁷ Taken from an endorsement in Maine Farmer (January 4, 1840), 412; Hubka, 183.

³⁸ Taken from the Ohio Cultivator (March 15, 1847); Shoemaker, ed., 19.

³⁹ Hydraulic ram is a mechanism which employs the weight of falling water; its introduction to farms and residential buildings was one of the major technological innovations of the mid-nineteenth century. Arthur Channing Downs, "The Introduction of the American Water Ram, ca. 1843-1850," APT, Volume VII, Number 4, 1975.

⁴⁰ A.B. Allen, ed., "A Pennsylvania Barn," The American Agriculturist (Volume VI, N.Y.: Harper & Bros., 1847), 24-6.

⁴¹ Allen, ed., 25.

⁴² "Remarks Upon Agricultural Buildings. No. 3. Barn and Stabling," The Farmer's Cabinet (Vol. II, August 1837-July 1838, Philadelphia: John Libby Publishing, 1838), 180.

⁴³ "Remarks Upon Agricultural Buildings. No. 3. Barn and Stabling," 180.

⁴⁴ "Remarks Upon Agricultural Buildings. No. 3. Barn and Stabling," 180.

⁴⁵ "Remarks Upon Agricultural Buildings. No. 3. Barn and Stabling," 195.

¹ Another story over the threshing floor platform was added to the “Swiss bridge barn”. It was also cited earlier that the English Quakers often extended the “Lake District” bank barn upwards in order to gain more storage space and it was this practice which evolved into the Pennsylvania “double-decker”.

² Montgomery County Register of Wills No. 3278, Maria L. Janeway, September 30, 1890, “Schedule C-Expenses”, 1897, Department of Records, Norristown, PA.

³ Fletcher, Pennsylvania Agriculture and Country Life, 1640-1840, Volume I, 84.

⁴ “An English book on house design, published in 1870, pointed out that barns and stables were a necessary part of any proper country estate but observed that such utilitarian buildings ‘mostly form a portion of the offices which are placed out of view, concealed by plantations or shrubbery, and generally at some distance from the mansion to which they appertain.’.” Rybczinski, 108.

⁵ At a later date, these lands were significantly altered as a result of a filtration plant constructed along the Schuylkill River.

⁶ Alderfer, 172.

⁷ Shortly thereafter, the canal system was surpassed by the railroad since it provided faster and more economical transportation. Norristown Register and Democrat, October 16, 1844, “Valuable Real Estate at Public Sale,” “Wetherill File,” Historical Society of Montgomery County, Norristown, PA.

⁸ Account book mentions the wheat grown on “Field back of barn” (c. 1878); “Wetherill Farm Account Books, 1861-1881,” Farm Account Book No. 4, H.S.M.C., Norristown, PA.

⁹ Interview with Robert Fleming, Landscape Architect, site visit to Walnut Hill Farm, October 12, 1990.

¹⁰ Hence, the name “bridge barn”.

¹¹ Lloyd, 58; Bulletin of the Montgomery County Historical Society, Vol. 16, Norristown, Pennsylvania, 55.

¹² Ribbon pointing projects beyond the mortar joint and is smoothed on the exposed face to resemble a ribbon. Ridge pointing, on the other hand, creates a V-shaped joint.

¹³ Interview with John Milner, AIA, site visit to Walnut Hill Farm, October 12, 1990.

¹⁴ Scaffold holes are visible along the facade; as the scaffolding was disassembled, regular-shaped stones were inserted in their place.

¹⁵ Nicholson, 15.

¹⁶ Cloverseed purchased during the years 1862-63 included 3 1/2 bushels @ 4 5/8 on March 5th, 1862 and another 3 bushels the following year (March 3rd). "Wetherill Farm Account Books, 1861-1883," Account Book No.?, (1862-1864), Montgomery County Historical Society, Norristown, PA.

¹⁷ Valley Forge National Historical Park, "Walnut Hill Estate--Barn", Structure No. 143.B.

¹⁸ Robert Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 85.

¹⁹ He went on to comment that he saw no special merit in this, or other, improvements to the Pennsylvania barn. Shoemaker, ed., 20; taken from Richard Parkinson, "A Tour in America, in 1798, 1799, and 1800. Exhibiting Sketches of Society and Manners, and a Particular Account of the American System of Agriculture, with its Recent Improvements," (London, 1805).

²⁰ In his article, he describes how the location varied depending on the cellar's use and purpose: "...It may have been a room beside or beneath the ramp approaching the upper floor of the barn or part of one of the end stables within the barn which was used for storing root crops that were fed to the livestock."; Amos Long, Jr., "Pennsylvania Cave and Ground Cellars," Pennsylvania Folklife, Vol. II, No. 2, Fall 1960, 37, 39.

²¹ Robert Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter II, 85.

²² Long, Jr., 39.

²³ Nicholson, 15.

²⁴ These hay mows were referred to as "sink-mows" since they extended down beyond the threshing platform to the middle level floor height. The "double-decker" design lent itself to this set-up which created a large storage capacity for hay.

²⁵ Threshing on farms was normally done in early July, with harvesting occupying the months of June and July. Threshing machines appeared on the scene as early as the 1780's, but grain threshed by treading or flailing it on the barn floor, using horse-power, remained the primary means of threshing. Lemon, 178.

²⁶ John Beale Bordely, Essays and Notes on Husbandry and Rural Affairs (Philadelphia, PA: n.p., 1799), 134.

²⁷ Nicholson, 14.

²⁸ The bent is pre-assembled on the ground before it is raised into place. The stone foundation is constructed and the sills are laid on top, fitted together at each corner with a mortise cut through the pieces. The four corner-posts, which comprise the tenon part, connect to the sills and provide stability to the frame which become “anchored” to the foundation. The structure is erected bent by bent, until all sections are in place.

²⁹ Janett's(?) Estimate for repairing Old Barn, July 8th, 1862, which includes the cost of purchasing the following items: 5000 shingles, 400 lath, 200 Hemlock, 200 bands, 100 nails. The estimate included a carpenter's fee of \$30.00, with a total expense of \$119.70; “Wetherill Farm Account Books, 1861-1880,” Farm Account Book No.--, 1859-1878, Montgomery County Historical Society, Norristown, PA.

³⁰ Williamsport Training Center, “Technical Preservation Report”, prepared for Valley Forge National Historical Park, Valley Forge, PA.

³¹ These upper windows served to bring additional light into the threshing area; since the building relied on natural light as its only source, the placement of window openings was crucial to the design.

³² Valley Forge National Historical Park, “Walnut Hill Estate--Barn”, Structure No. 143.B.

³³ Maria L. Janeway's Will includes a detailed account of farm expenses through the years 1892-1902. One of the entries, recorded in August 1902, mentions the “Cost of digging Cistern at Farm”, which could possibly relate to the barn's cistern; Montgomery County Register of Wills No. 3278, Maria L. Janeway, September 30, 1890, Department of Records, Norristown, PA.

¹ Learned, 348.

² However, the use of corner quoins is typically indicative of an English trait, as Robert Ensminger points out: “The prototype bank barns of the English Lake District utilize similar stone work, including corner quoins...”. Ensminger, The Pennsylvania Barn, Manuscript Draft, Chapter III, 5.

³ As mentioned in Chapter Three, this Swiss tradition was done to the Swiss “bridge barn” as a result of the need for additional space.

⁴ Rybczynski, 11.

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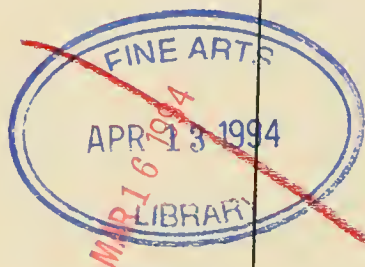
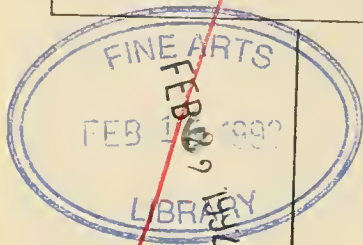
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